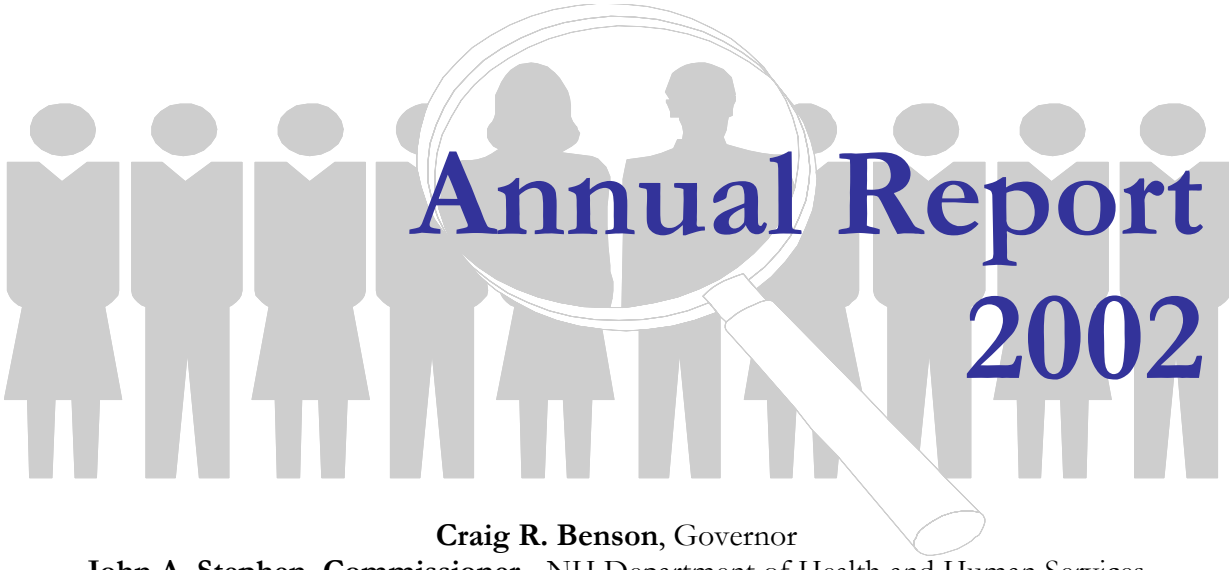
New Hampshire

Communicable Disease Surveillance



Annual Report 2002

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PURPOSE AND FORMAT OF REPORT

The purpose of this report is to provide useful information on reported communicable diseases in New Hampshire (NH) for health care providers, educators and other interested persons. Additionally, this report discusses emerging public health concerns and other illnesses that may pose a threat to the public's health.

The New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section (CDSS) oversees the management of public health disease surveillance systems. Public health disease surveillance involves the systematic collection, analysis, interpretation and dissemination of population based data on adverse health conditions. Surveillance data are obtained from health care providers and laboratories. Social and demographic information is collected to determine patterns of disease in the population. All public health data that are collected are maintained under strict confidentiality and security procedures.

The report is divided into two sections. The first section includes select disease summaries with an emphasis on 2002 data. Each summary includes a brief background on the epidemiology of the disease, clinical features and disease control methods. Tables and graphs supplement key statistical data. Whenever possible, information on disease trends in the United States are compared to those of NH trends. Also, where relevant, the report makes reference to the benchmarks set forth by the Healthy New Hampshire 2010 (HNH 2010) objectives. Specific commentaries are guided by the unique occurrence of each disease in our state. The second section includes special summaries on diseases that are not reportable but are of public health concern.

We hope that you will find this report useful as we work in partnership to keep New Hampshire healthy.

DISEASE REPORTING IN NEW HAMPSHIRE

NH public health law RSA 141-C authorizes the reporting of communicable diseases to programs within the NH Division of Public Health Services, such as the Communicable Disease Surveillance Section (CDSS). Administrative rules He-P 301, which implement RSA 141-C, require the reporting of diseases and organisms by health care providers and laboratories, respectively. The list includes diseases and organisms that are indicative of communicable diseases with public health significance. These lists are revised periodically based on the need for public health response or data collection to identify trends.

Communicable diseases are reportable so that public health measures can be implemented to control the spread of disease to others. Timely and complete reporting by health care providers is a vital component of the public health surveillance system. Examples of public health interventions include:

- Identification and treatment of people exposed to diseases like meningitis, rabies, or tuberculosis (TB)
- Removal of contagious persons with diseases like TB or pertussis from the workplace or school setting
- Removal of a contagious food-handler from a restaurant
- Obtaining a food history to determine the source of contaminated food
- Providing educational information about behaviors that might put others at risk

Information reported is collected and analyzed, published in reports, and used for program planning and evaluation. The Centers for Disease Control and Prevention (CDC) compiles state reported disease surveillance data on the national level and publishes disease trends in the Morbidity and Mortality Weekly Report (MMWR).

NEW HAMPSHIRE REPORTABLE DISEASE LIST

All those diseases labeled with an asterisk (*) should be reported within 24 hours. All others should be reported within 72 hours.

- ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS)
- ANTHRAX*
- BOTULISM*
- BRUCELLOSIS
- CAMPYLOBACTERIOSIS
- CHLAMYDIAL INFECTION, INCLUDING CHLAMYDIAL PELVIC INFLAMMATORY DISEASE (PID), PNEUMONIA, CONJUNCTIVITIS, CERVICITIS, AND URETHRITIS
- CHOLERA*
- COCCIDIOIDOMYCOSIS
- CRYPTOSPORIDIOSIS
- CYCLOSPORA INFECTION
- DIPHTHERIA*
- EHRLICHIOSIS
- ENCEPHALITIS, ARBOVIRAL ONLY*
- *ESCHERICHIA COLI 0157:H7* INFECTION AND OTHER SHIGA-TOXIN PRODUCING E. COLI
- FOOD POISONING*
- GIARDIASIS
- GONORRHEA, INCLUDING GONOCOCCAL OPHTHALMIA NEONATORUM, GONOCCOCAL PELVIC INFLAMMATORY DISEASE (PID), AND DISSEMINATED GONOCOCCAL DISEASE
- *HAEMOPHILUS INFLUENZAE*, INVASIVE DISEASE*
- HANTAVIRUS PULMONARY SYNDROME*
- HEMOLYTIC UREMIC SYNDROME
- HEPATITIS, VIRAL: A*, B, E, G
- HEPATITIS, VIRAL: POSITIVE B SURFACE ANTIGEN IN A PREGNANT WOMAN
- HUMAN IMMUNODEFICIENCY VIRUS (MAY INCLUDE NAME)
- INVASIVE GROUP A/B STREPTOCOCCUS DISEASE
- LEGIONELLOSIS
- LEPROSY, HANSEN'S DISEASE
- LISTERIOSIS
- LYME DISEASE
- MALARIA
- MEASLES*
- MUCOPURULENT CERVICITIS (MPC)
- MUMPS*
- *NEISSERIA MENINGITIDIS*, INVASIVE DISEASE*
- NON-GONOCOCCAL URETHRITIS (NGU)
- PELVIC INFLAMMATORY DISEASE (PID), UNSPECIFIED
- PERTUSSIS*
- PLAGUE*
- PNEUMOCYSTIS PNEUMONIA
- POLIOMYELITIS*
- PSITTACOSIS
- RABIES IN HUMANS OR ANIMALS*
- ROCKY MOUNTAIN SPOTTED FEVER
- RUBELLA, INCLUDING CONGENITAL RUBELLA SYNDROME*
- SALMONELLOSIS
- SHIGELLOSIS
- SYPHILIS, INCLUDING CONGENITAL SYPHILIS SYNDROME
- TETANUS
- TOXIC-SHOCK SYNDROME (TSS) (STREPTOCOCCAL OR STAPHYLOCOCCAL)
- TRICHINOSIS
- TUBERCULOSIS DISEASE*
- TUBERCULOSIS INFECTION
- TYPHOID FEVER*
- TYPHUS FEVER
- YERSINIOSIS
- VANCOMYCIN RESISTANT ENTEROCOCCI (VRE)
- VANCOMYCIN RESISTANT *STAPHYLOCOCCUS AUREUS* (VRSA)
- ANY UNUSUAL OCCURRENCE OR CLUSTER OF ILLNESS WHICH MAY POSE A THREAT TO THE PUBLIC'S HEALTH*

FREQUENTLY ASKED QUESTIONS

What are reportable diseases?
Reportable diseases are conditions that, due to their infectious nature and the risks they pose in being spread to others, are mandated under the NH law to be reported to DHHS. Reporting of suspected or confirmed communicable diseases is mandatory. Primary responsibility to report rests with health care providers and laboratories but anyone with knowledge of a reportable disease is required to notify DHHS.

What is a communicable disease?
A communicable disease is an illness caused by an infectious agent, or its products that can be transmitted between humans or animals. The transmission can be direct or indirect, through a plant, animal or inanimate object.

Where and how can I report a communicable disease?

Fax reports to:	(603) 271-0545
Call reports to:	(603) 271-4496 (Office) (800) 852-3345 ext 4496 (Toll free office) (888) 836-4971 (Hotline)
Mail reports to:	Communicable Disease Control and Surveillance 29 Hazen Drive Concord, NH 03301

What is disease surveillance?
Disease surveillance is the systematic collection, analysis and interpretation of health data in order to implement effective illness control measures.

What are the uses of disease surveillance data?
Surveillance data are used to monitor disease trends, identify populations at risk and to detect and respond to outbreaks. Additionally, surveillance data are used to estimate the burden of disease in the population, target prevention strategies and evaluate their effectiveness, allocate funds for health and social services and facilitate access to health, social, and prevention services.

What is disease control?
Disease control is the process or ongoing system of preventing or minimizing the occurrence of illness. Disease control may involve the investigation of individual cases as well as epidemics.

Where can I find more information about the Department of Health and Human Services Communicable Disease Control and Surveillance?
You may visit us at our web site:
http://www.dhhs.state.nh.us/DHHS/BCDCS/default.htm

ACKNOWLEDGEMENTS

We gratefully acknowledge all of the health care providers of New Hampshire who contributed to the reporting of communicable disease surveillance data in 2002. We would also like to recognize all stakeholders who participated in the planning and development of this report.

Contributors:

The CDSS staff would like to recognize the following colleagues and programs for their time and expertise in the preparation of this report:

Jesse Greenblatt, MD, MPH, State Epidemiologist and Director

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Epidemiology:

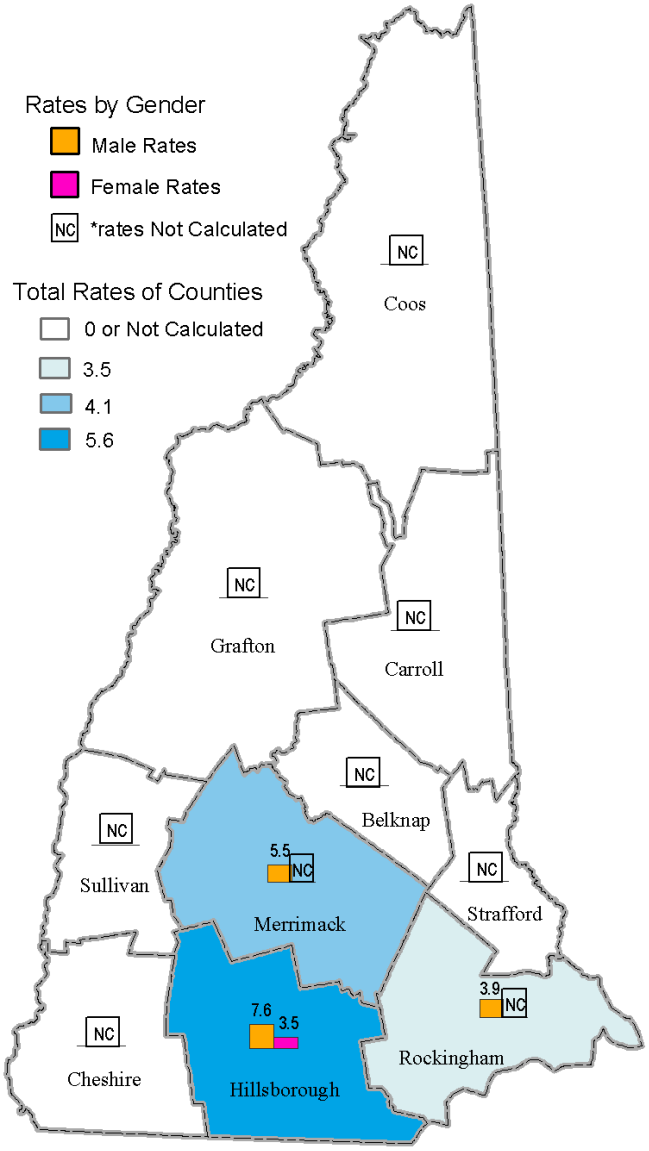
Infection with *Human Immunodeficiency Virus* (HIV), a retrovirus, produces a spectrum of disease that progresses from clinically asymptomatic infection to acquired immunodeficiency syndrome (AIDS). The HIV virus is spread by sexual contact with an infected person, sharing of contaminated needles or syringes (primarily for injection drug use), or less commonly through transfusions of infected blood (now rare where blood is screened for HIV). HIV-infected women may transmit the virus to their babies during pregnancy, birth or through breast-feeding. After becoming infected, a person can transmit the virus anytime. Risk groups include; men who have sex with men, injection drug users, and persons who have an unprotected sexual exposure with an HIV-infected person. HIV infection has been documented worldwide, with a particularly devastating effect in developing countries.

Clinical features:

In untreated patients, the time between HIV infection and the development of AIDS varies (with a median of ten years). AIDS is the advanced stage of HIV infection, which results in progressive damage to the immune system and other organs. AIDS is diagnosed by a physician using certain clinical criteria. HIV infection can weaken the immune system to the point that it has difficulty in fighting off certain infections. These are known as 'opportunistic' infections and can be fatal with progressed HIV infection (AIDS). Symptoms of AIDS may include; rapid weight loss, fatigue, fever, night sweats and swollen lymph glands.

Disease control methods:

HIV infection is incurable but treatable with medications. Medications have demonstrated some success in delaying progression of HIV infection to AIDS diagnosis. Avoidance of risky behaviors such as sharing needles and having unprotected sex are the best ways to prevent HIV transmission.



AIDS by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	9	-	1	-		10	-
Carroll	4	-	0	-		4	-
Cheshire	8	-	1	-		9	-
Coos	1	-	1	-		2	-
Grafton	6	-	0	-		6	-
Hillsborough	75	7.6	34	3.5		109	5.6
Merrimack	20	5.5	9	-		29	4.1
Rockingham	45	5.9	8	-		53	3.5
Strafford	14	-	3	-		17	-
Sullivan	6	-	2	-		8	-
Unknown		-		-			-
Total	188	5.96	59	1.89		247	3.92

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

AIDS by City

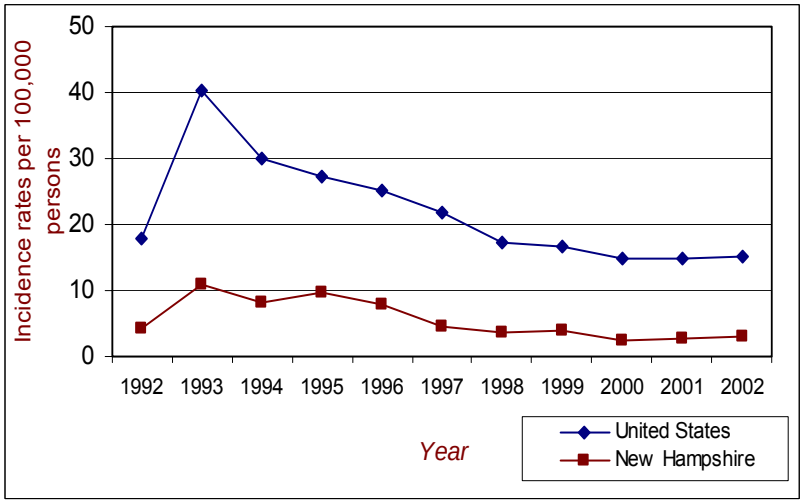
	1997	1998	1999	2000	2001	2002
Manchester	8	13	9	11	8	9
Nashua	11	6	6	3	4	4

AIDS

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	46	4.1	45,472	17.8
1993	124	11.0	103,691	40.2
1994	92	8.1	78,279	30.1
1995	112	9.8	71,547	27.2
1996	93	8.0	66,885	25.2
1997	55	4.7	58,492	21.9
1998	42	3.5	46,521	17.2
1999	46	3.8	45,104	16.7
2000	31	2.5	40,758	15.0
2001	34	3.2	41,868	14.9
2002	39	3.1	42,745	15.3

* :Crude rates per 100,000 persons

AIDS Incidence Rates
New Hampshire and the United States: 1992-2002



Comments

- Overall, AIDS cases have declined in recent years both nationally and in NH. This trend is due to advances in HIV treatments during the mid 1990s. However, this decline appears to be leveling since 1999.
- In 2002, 39 AIDS cases were reported in NH. This represented a slight increase from 34 cases reported in 2001.
- The majority of reported AIDS cases in 2002 are among males (82%) and nearly half of those males (50%) are in the 30-39 year age group.
- By identified risk, men who have sex with men (MSM) represent the largest proportion (41%) of total AIDS cases, followed by IDU (10%). Risk information is not identified or reported in 36% of reported AIDS cases in 2002.
- Nearly one half (46%) of the AIDS cases reported in 2002 were co-diagnosed with new HIV infection.
- A standardized HIV surveillance system has not been fully developed in New Hampshire. However, there were 30 reports of HIV infection in 2002.

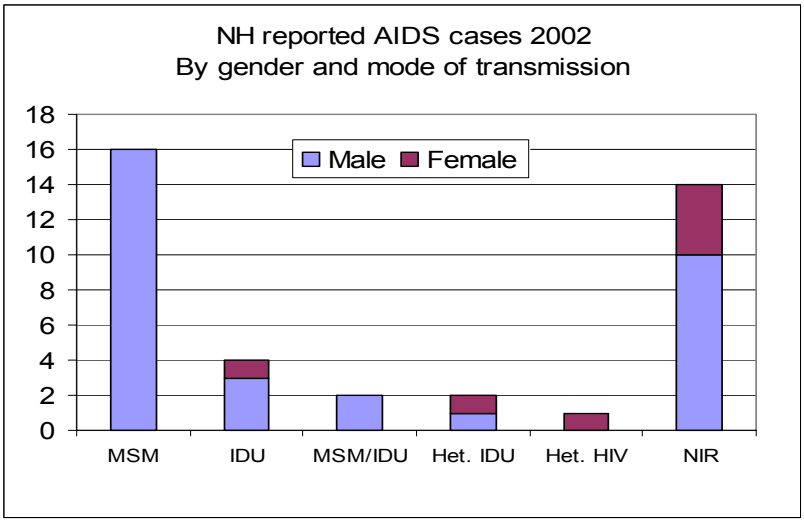


Figure 3.
MSM-Men who have sex with men; **IDU**-Injection drug user; **Het.HIV**-Heterosexual contact with HIV-infected person; **Het.IDU**-Heterosexual contact with injection drug user; **Blood**- Receipt of blood, components, or tissue; **NIR**-No reported or identified risk factor for HIV transmission.

For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, STD-HIV Prevention Section at 1-800-852-3345 ext 4502.

Epidemiology:

Species of *Campylobacter* are the most common bacterial cause of diarrheal illness in the United States. It is estimated that about 1% of population is affected by campylobacteriosis each year. The majority of cases are isolated events associated with poultry handling or eating lightly cooked meat. Some people acquire infection through contact with infected pets, especially puppies and kittens. The organism is not generally spread from person to person. When outbreaks occur it is largely due to drinking of un-pasteurized milk or contaminated water.

Clinical features:

The incubation period is between 1-10 days and disease generally lasts for about 1 week.

Symptoms include abdominal pain, diarrhea, malaise, fever, nausea and vomiting. Some infected people have no symptoms at all. People with compromised immune systems can develop a serious life-threatening disease.

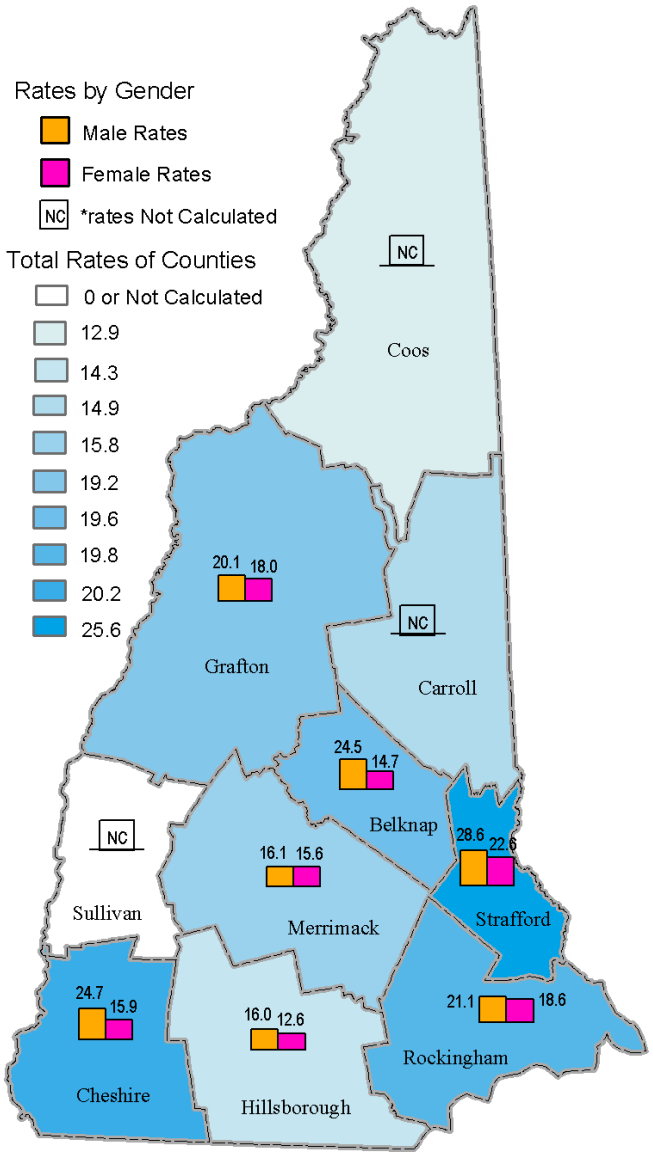
About 1 in every 1000 reported campylobacteriosis leads to a rare neurological illness, Guillain-Barré syndrome (GBS), that lasts several weeks and usually requires intensive care. Most people recover completely from GBS.

Disease control methods:

The majority of infected individuals recover without any specific treatment. Antibiotics are recommended only for severe infections and for carrier state.

Prevention includes meticulous hand washing with soap after handling raw foods of animal origin or after contact with pet feces.

Thorough cooking of poultry, milk pasteurization and water chlorination is also recommended as an effective preventive measure.



Campylobacteriosis by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	31	24.5	20	14.7		51	19.6
Carroll	17	-	15	-		32	14.9
Cheshire	43	24.7	30	15.9		73	20.2
Coos	13	-	7	-		20	12.9
Grafton	39	20.1	36	18.0		75	19.2
Hillsborough	145	16.0	117	12.6		262	14.3
Merrimack	52	16.1	50	15.6		102	15.8
Rockingham	146	21.1	127	18.6		273	19.8
Strafford	75	28.6	63	22.6		138	25.6
Sullivan	8	-	7	-		15	-
Unknown		-	5	-		5	-
Total	569	19.27	477	15.53		1046	17.41

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Campylobacteriosis by City

	1997	1998	1999	2000	2001	2002
Manchester	19	10	16	12	13	18
Nashua	9	11	4	6	12	17

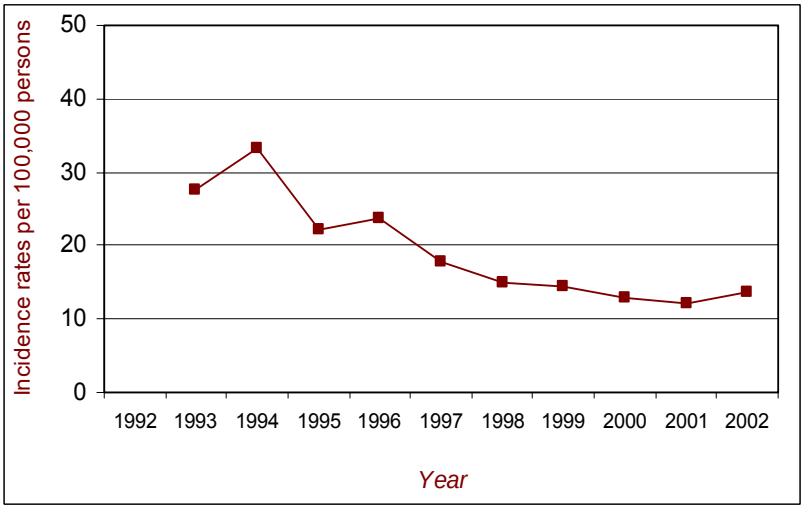
Campylobacteriosis

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	*na*	*na*	*nr*	*nr*
1993	311	27.6	*nr*	*nr*
1994	377	33.2	*nr*	*nr*
1995	253	22.0	*nr*	*nr*
1996	275	23.7	*nr*	*nr*
1997	210	17.9	*nr*	*nr*
1998	177	14.9	*nr*	*nr*
1999	173	14.4	*nr*	*nr*
2000	157	12.8	*nr*	*nr*
2001	154	12.2	*nr*	*nr*
2002	175	13.8	*nr*	*nr*

* :Crude rates per 100,000 persons

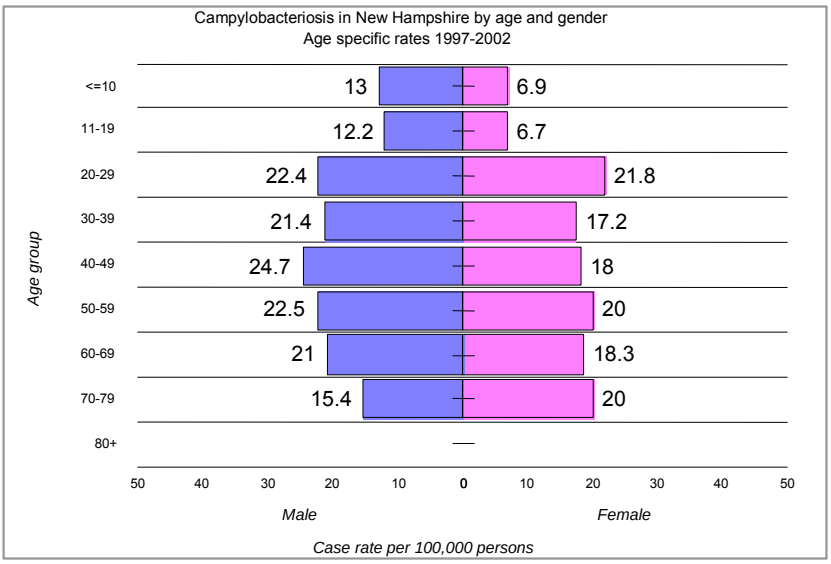
nr :Non reportable

Campylobacteriosis Incidence Rates New Hampshire: 1992-2002



Comments:

- The incidence rate of Campylobacteriosis has been steadily decreasing in recent years although a slight increase was noted in 2002
- Campylobacteriosis is not a nationally reportable disease; therefore comparison between NH and US incidence rates cannot be done.



For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

Epidemiology:

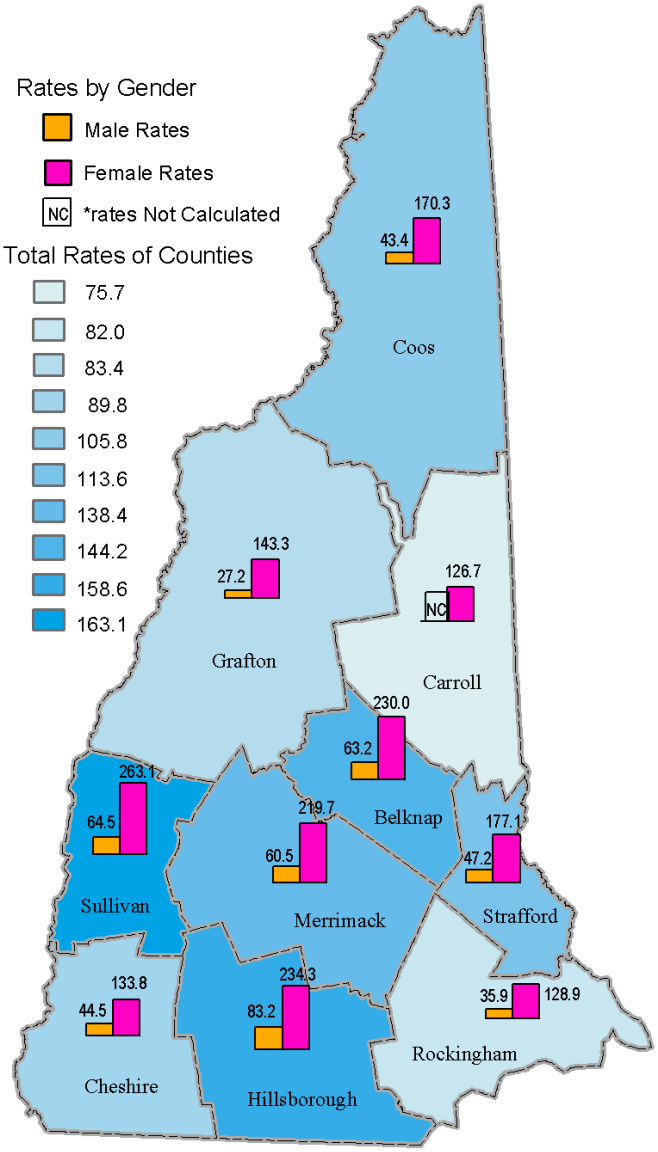
Chlamydia, caused by the bacteria *Chlamydia trachomatis*, is the most common reportable sexually transmitted disease in the United States with the highest rates among sexually active adolescents and young adults. Chlamydia is the most frequently reported infectious disease both nationally and in New Hampshire. Chlamydia is spread person-to-person, most efficiently by vaginal or anal intercourse, and generally less efficiently by oral sexual activity. Untreated chlamydial infection in women may lead to serious complications such as pelvic inflammatory disease (PID), infertility and ectopic pregnancy.

Clinical features:

The average incubation is 7 to 14 days but may be longer. Once diagnosed, a person can be treated with an antibiotic. In general, persons who have had sexual contact with an infected person during the 60 days preceding the diagnosis or onset of symptoms should be evaluated for infection. Asymptomatic infections are common in both men and women. However, if symptoms are present, persons may experience abnormal genital discharge or burning with urination.

Disease control methods:

The most effective methods of disease control are through education and prevention with an emphasis on protected sexual activity through the use of condoms. Antibiotic therapy treats infection. Prophylactic treatment of sexual contacts is also recommended and persons infected should abstain from sexual activity until they and their sex partners have been treated.



Chlamydia by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	70	63.2	251	230.0		321	144.2
Carroll	17	-	95	126.7		112	75.7
Cheshire	74	44.5	240	133.8		314	89.8
Coos	26	43.4	115	170.3		141	105.8
Grafton	57	27.2	283	143.3		340	83.4
Hillsborough	742	83.2	2054	234.3		2796	158.6
Merrimack	179	60.5	629	219.7		808	138.4
Rockingham	231	35.9	802	128.9		1033	82.0
Strafford	140	47.2	539	177.1		679	113.6
Sullivan	50	64.5	221	263.1		271	163.1
Unknown	4	-	3	-		7	-
Total	1590	56.15	5232	186.24		6822	120.85

** : Age adjusted standardized rates per 100,000 persons*
- : rates not calculated on counts <20

Objective: Reduce the incidence of chlamydia infection among adolescents and young adults (per 100,000 population 15-24 years of age)

NH Baseline 1999	512.7
NH Target 2010	513
NH 2002	780.3

Chlamydia by City

	1997	1998	1999	2000	2001	2002
Manchester	172	237	236	243	292	291
Nashua	102	86	83	116	118	183

Chlamydia

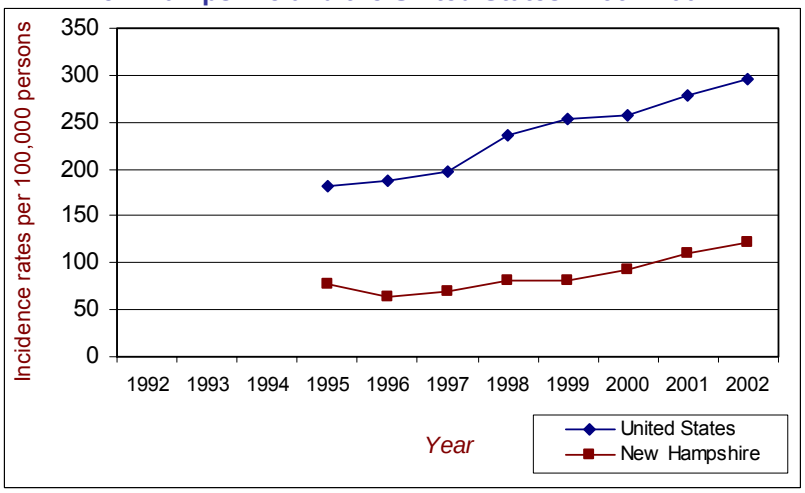
	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	+	+	*nr*	*nr*
1993	+	+	*nr*	*nr*
1994	+	+	*nr*	*nr*
1995	898	78.2	477,638	182.6
1996	732	63.0	498,884	188.1
1997	816	69.6	526,671	196.8
1998	960	81.0	604,420	236.6
1999	976	81.3	656,721	254.1
2000	1,130	92.0	702,093	257.8
2001	1,383	109.8	783,242	278.3
2002	1,557	122.4	834,555	296.6

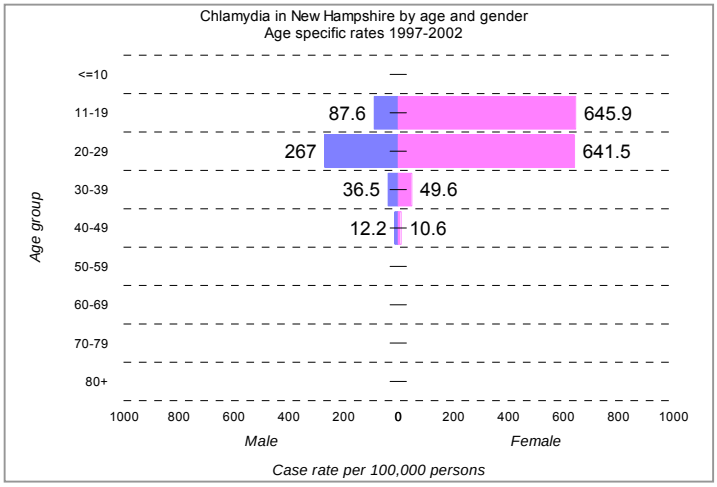
* :Crude rates per 100,000 persons

nr :Non reportable

\+ :Data limited - See Technical Notes

Chlamydia Incidence Rates
New Hampshire and the United States: 1992-2002

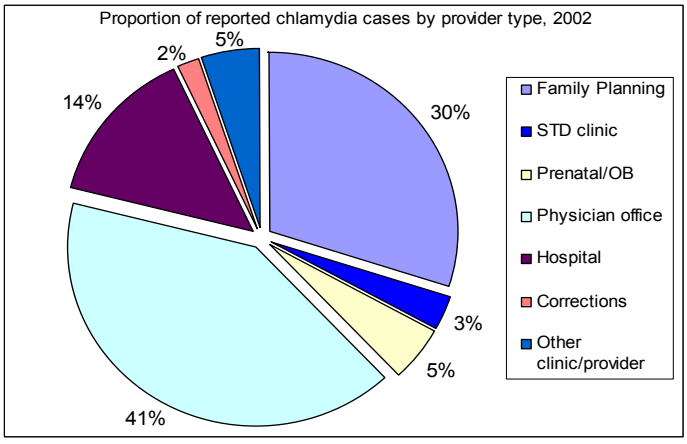


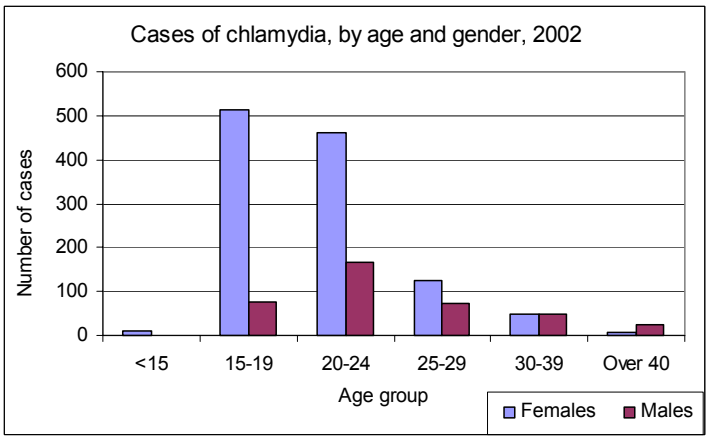


Comments:

- The incidence of chlamydia has increased in recent years. The increase is due, in part, to screening efforts among sexually active adolescents and young adults.
- Chlamydia cases in NH increased 13% in 2002.
- Chlamydia is more frequently reported among females. In 2002, females accounted for 75% of cases as compared to males, 25%.
- Chlamydia is most prevalent among persons younger than 25 years of age regardless of gender. In 2002, 85% of females and 62% of males were in this age group.
- In 2002, the majority of reported chlamydia infections (71%) were diagnosed in a private physician office (41%) or a family planning site (30%).

For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, STD-HIV Prevention Section at 1-800-852-3345 ext 4502.





Note: Other includes college health sites and clinics with multiples services.

Epidemiology:

Cryptosporidium parvum is a parasite with the ability to cause a diarrheal disease, and can be found in every region of the United States and throughout the world. *Cryptosporidium parvum* is recognized as one of the most common causes of waterborne disease in humans in the United States. The source of *Cryptosporidium parvum* is humans, cattle and other domestic animals. The parasite can be found in soil, food, and water or on the surfaces that have been contaminated with the feces from infected humans and animals.

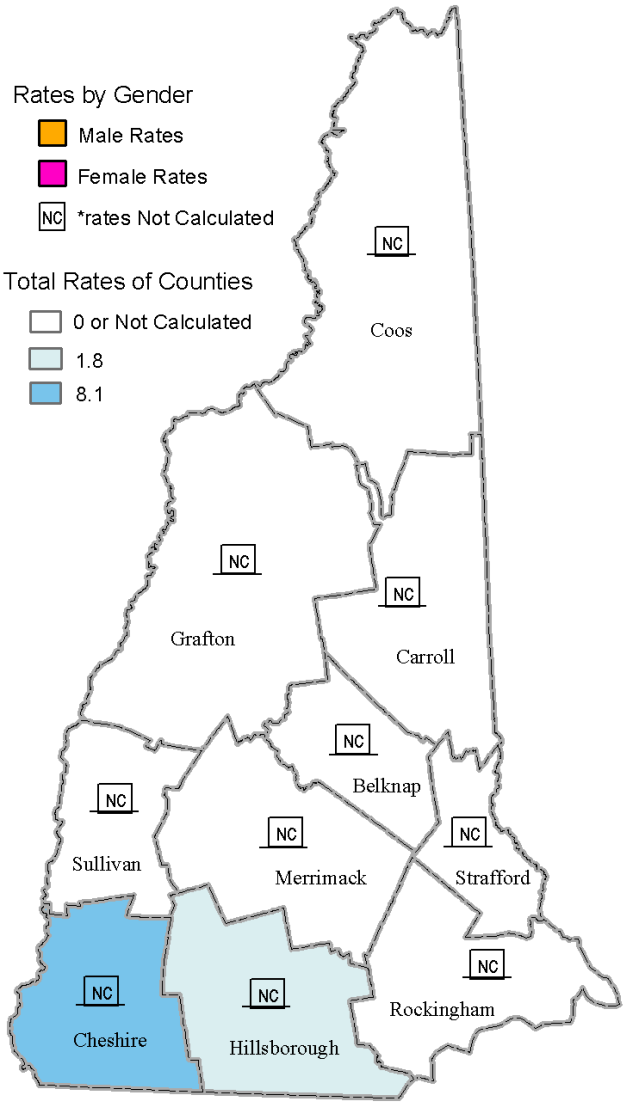
Clinical features:

The incubation period is between 1-12 days and disease generally lasts about two weeks, sometimes with a relapsing course.

Symptoms include nausea and vomiting followed by watery diarrhea and abdominal cramping. The disease is usually benign and self-limiting in individuals with normal immune systems. However, it can be devastating for patients with weakened immune systems. Asymptomatic infections are common and it is not clear if repetitive infection or latent infection with reactivation can occur.

Disease control methods:

Supportive therapy with fluid and electrolyte replacement is the only recommended therapy. Preventive strategies for *Cryptosporidium parvum* infection include good personal hygiene and avoidance of contaminated food and water. Severely immunocompromised persons should avoid contact with fresh water in streams and lakes.



Cryptosporidiosis by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	1	-	0	-		1	-
Carroll	2	-	0	-		2	-
Cheshire	17	-	12	-		29	8.1
Coos	2	-	2	-		4	-
Grafton	8	-	6	-		14	-
Hillsborough	15	-	19	-		34	1.8
Merrimack	5	-	2	-		7	-
Rockingham	3	-	6	-		9	-
Strafford	2	-	5	-		7	-
Sullivan	5	-	4	-		9	-
Unknown		-	1	-		1	-
Total	60	1.99	57	1.84		117	1.92

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Cryptosporidiosis by City

	1997	1998	1999	2000	2001	2002
Manchester	0	1	0	2	0	4
Nashua	0	1	0	2	0	7

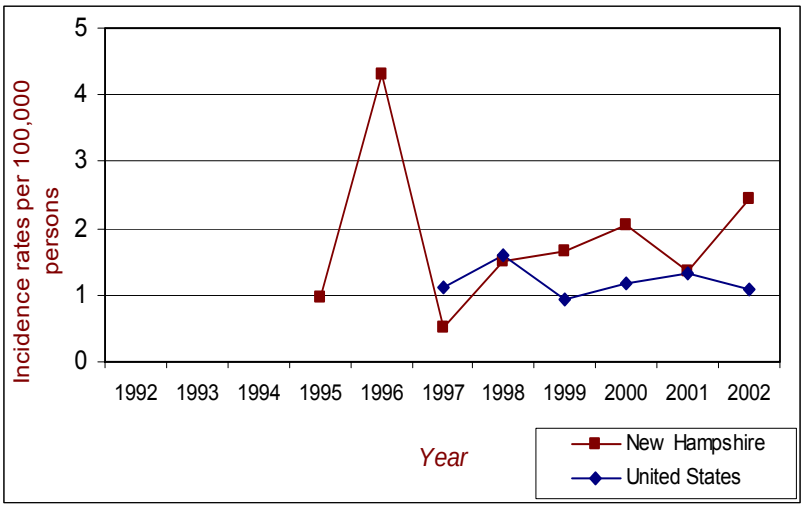
Cryptosporidiosis

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	*nr*	*nr*	*nr*	*nr*
1993	*nr*	*nr*	*nr*	*nr*
1994	*nr*	*nr*	*nr*	*nr*
1995	11	1.0	*nr*	*nr*
1996	50	4.3	*nr*	*nr*
1997	6	0.5	2,566	1.1
1998	18	1.5	3,793	1.6
1999	20	1.7	2,361	0.9
2000	25	2.0	3,128	1.2
2001	17	1.4	3,785	1.3
2002	31	2.4	3,016	1.1

* :Crude rates per 100,000 persons

nr :Non reportable

Cryptosporidiosis Incidence Rates
New Hampshire and the United States: 1992-2002



Comments:

The specific reason for an increase incidence of *Cryptosporidium parvum* in a year 1996 is not known. In general, the incidence can be influenced by elements such as new diagnostic criteria, changes in reporting requirements or practice, publicity about a particular condition or possibly an unrecognized outbreak.

For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

Epidemiology:

Escherichia coli O157:H7 is an enteric pathogen with the ability to produce potent toxin and cause severe illness.

The organism lives in the intestines of healthy cattle. Meat can get contaminated during slaughter; bacteria present on a cow's udders can contaminate raw milk. Another source of infection is sewage-contaminated water or vegetables contaminated with cattle feces.

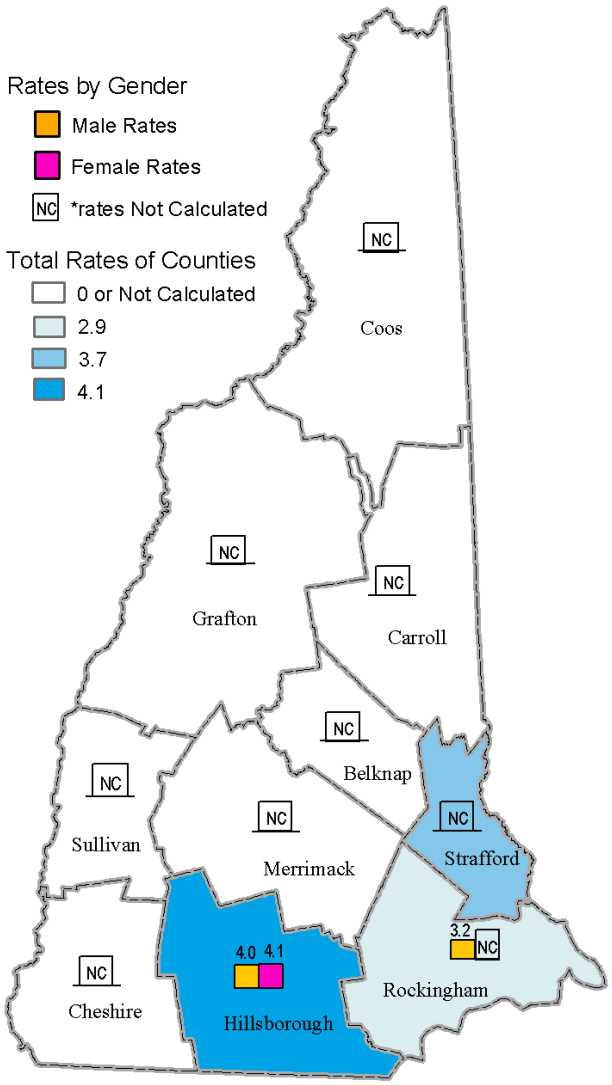
Clinical features:

The incubation period is between 2-8 days, and the disease lasts for 5-10 days. Symptoms include abdominal pain, vomiting and diarrhea, which is often bloody. There is usually little or no fever. One percent of affected individuals develop life-threatening hemolytic-uremic syndrome (HUS). HUS is a condition when the red blood cells are destroyed and the kidneys fail to function.

Disease control methods:

Fluid and electrolyte replacement is the only recommended therapy. Antibiotic therapy is generally not recommended as it may precipitate kidney complication. Anti-diarrheal agents should be avoided as well because they slow the elimination of pathogen from the body.

Prevention includes thorough cooking of ground beef to 160° with the use of a meat thermometer. Un-pasteurized milk, juice or cider should be avoided. Meticulous hand washing prevents person-to-person transmission.



Escherichia coli O157:H7 by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	2	-	7	-		9	-
Carroll	4	-	2	-		6	-
Cheshire	6	-	8	-		14	-
Coos	6	-	5	-		11	-
Grafton	6	-	8	-		14	-
Hillsborough	35	4.0	37	4.1		72	4.1
Merrimack	10	-	8	-		18	-
Rockingham	21	3.2	16	-		37	2.9
Strafford	12	-	9	-		21	3.7
Sullivan	4	-	4	-		8	-
Unknown		-		-			-
Total	106	3.71	104	3.53		210	3.61

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Escherichia coli O157:H7 by City

	1997	1998	1999	2000	2001	2002
Manchester	0	6	4	3	1	1
Nashua	1	5	4	8	6	1

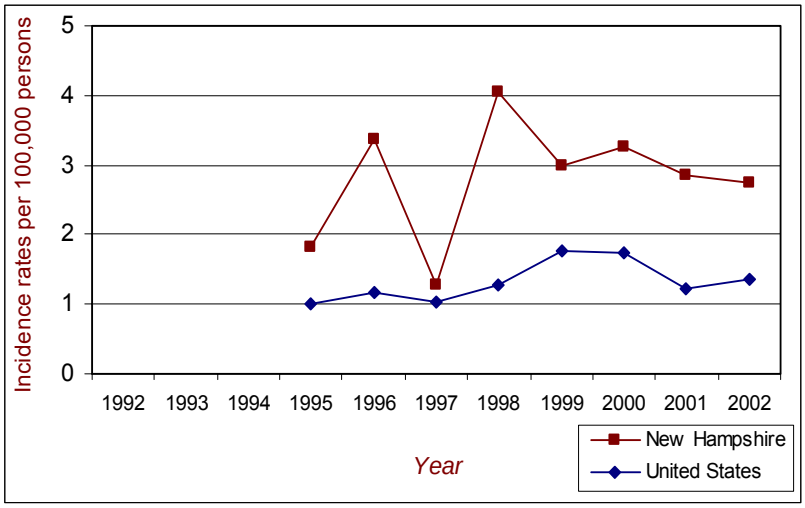
Escherichia coli O157:H7

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	*nr*	*nr*	*nr*	*nr*
1993	*nr*	*nr*	*nr*	*nr*
1994	*nr*	*nr*	*nr*	*nr*
1995	21	1.8	2,139	1.0
1996	39	3.4	2,741	1.2
1997	15	1.3	2,555	1.0
1998	48	4.1	3,161	1.3
1999	36	3.0	4,513	1.8
2000	40	3.3	4,528	1.7
2001	36	2.9	3,287	1.2
2002	35	2.8	3,840	1.4

* :Crude rates per 100,000 persons

nr :Non reportable

Escherichia coli O157:H7 Incidence Rates
New Hampshire and the United States: 1992-2002



Comments:

The *E. coli O157:H7* incidence has been fluctuating in recent years. This fluctuation might reflect changes in reporting requirements or laboratory practices. Publicity regarding this condition accounts for a portion of the anomalies in any given year.

For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

Epidemiology:

Gonococcal infection of the genitourinary tract, or gonorrhea, is a sexually transmitted disease (STD) common worldwide. The infectious agent, *Neisseria gonorrhoeae*, is a bacterium, which is transmitted person-to-person through sexual activity. Complications of gonococcal infection include a blood stream infection that may cause endocarditis or meningitis. Some strains of the bacteria have become resistant to certain antibiotics.

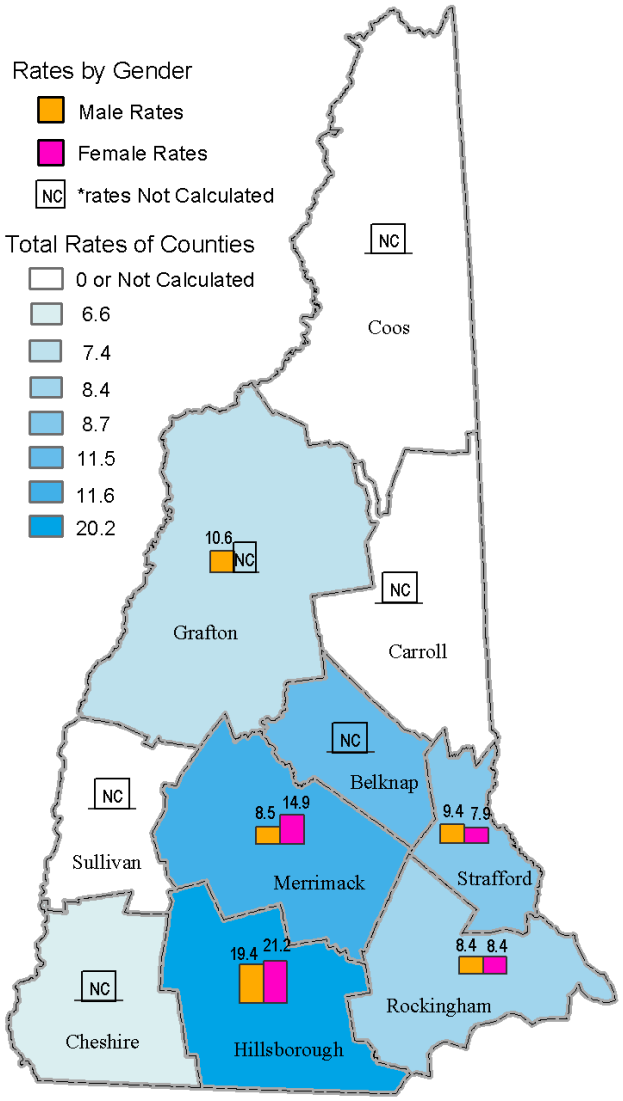
The disease affects males and females of all ages but more commonly young adult populations. In the United States, an estimated 650,000 new infections occur each year.

Clinical features:

Incubation period is usually 2 to 7 days but may be longer. Gonorrhea may be asymptomatic and the period of communicability may extend for months in the untreated individual. Asymptomatic infections are common among females, less common among males. Symptoms in males may present as purulent urethral discharge or dysuria. Untreated infection in women may lead to Pelvic Inflammatory Disease (PID).

Disease control methods:

Antibiotic therapy (single dose) treats infection. Disease control methods are accomplished by investigation of sexual contacts and identifying the source of infection. Persons diagnosed should abstain from sexual activity until antibiotic therapy is completed. Sexual contacts within 30 days preceding the diagnosis should be tested and treated presumptively for infection.



Gonorrhea by County and Gender 1997-2002

	Male		Female		Unk	Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	9	-	17	-		26	11.5
Carroll	1	-	3	-		4	-
Cheshire	11	-	12	-		23	6.6
Coos	3	-	5	-		8	-
Grafton	22	10.6	8	-		30	7.4
Hillsborough	178	19.4	188	21.2		366	20.2
Merrimack	27	8.5	43	14.9		70	11.6
Rockingham	60	8.4	54	8.4		114	8.4
Strafford	28	9.6	24	7.9		52	8.7
Sullivan	3	-	9	-		12	-
Unknown		-		-	3	3	-
Total	342	11.65	363	12.82	3	708	12.21

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Gonorrhea by City

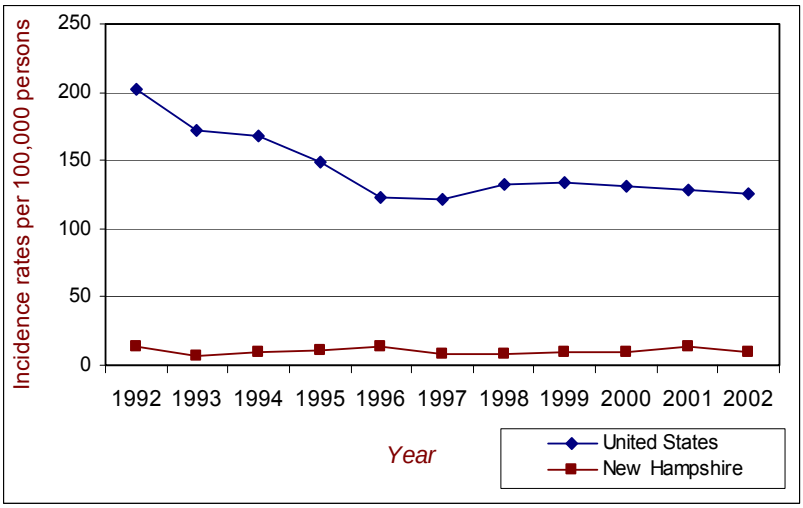
	1997	1998	1999	2000	2001	2002
Manchester	27	19	56	28	77	30
Nashua	8	10	5	17	8	14

Gonorrhea

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	145	13.1	501,409	201.6
1993	83	7.4	439,673	172.4
1994	103	9.1	418,068	168.4
1995	118	10.3	392,848	149.4
1996	153	13.2	325,883	122.8
1997	96	8.2	324,907	121.4
1998	91	7.7	355,642	132.8
1999	115	9.6	360,076	133.2
2000	110	9.0	358,995	131.7
2001	176	14.0	361,705	128.5
2002	120	9.4	351,852	125.0

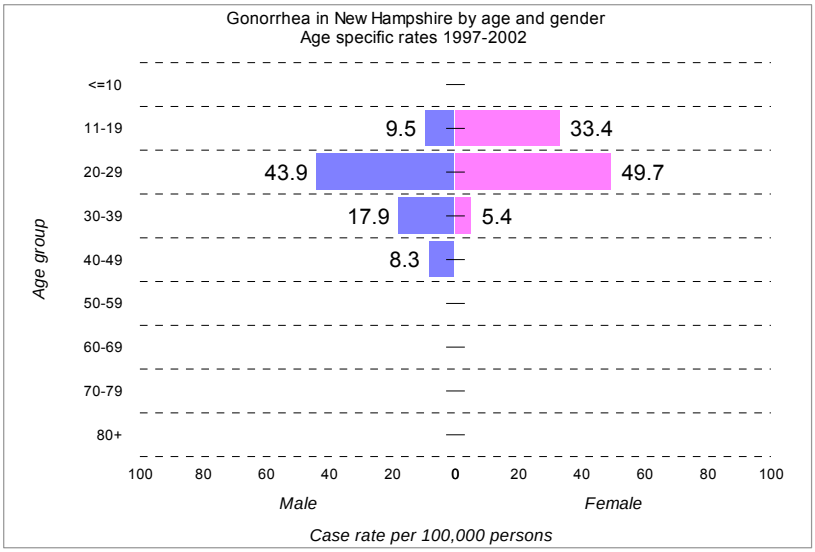
* :Crude rates per 100,000 persons

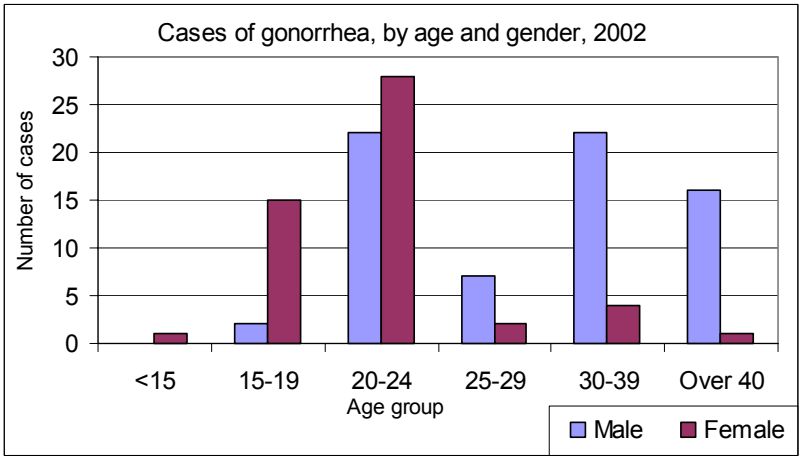
Gonorrhea Incidence Rates
New Hampshire and the United States: 1992-2002



Comments:

- After a steady decline, national rates of gonorrhea have increased somewhat in recent years. This increase may be attributed to an increase in unsafe sex, particularly among men who have sex with men (MSM).
- Gonorrhea incidence decreased 32% in 2002 after a significant increase occurred in 2001 (60%). This increase was primarily due to a cluster of cases in Hillsborough County.
- The distribution of cases between males and females has been comparable in recent years.
- Incident cases of gonorrhea occur most often among younger females (under 25) and slightly older males (over 30).
- Although rare, one case of quinolone-resistant gonorrhea was reported in 2002.





For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, STD-HIV Prevention Section at 1-800-852-3345 ext 4502.

Epidemiology:

Group A streptococcus (GAS), or *Streptococcus pyogenes*, is a bacterium commonly found in the throat and on the skin. Most GAS infections are mild diseases, such as pharyngitis and impetigo. However, severe, often life-threatening disease can occur when the bacteria get into the blood, cerebrospinal fluid, lungs, wounds or deep muscle or fat tissue. This type of infection is called invasive GAS disease.

GAS infections occur worldwide. The bacteria are spread from person to person by direct contact. The primary risk groups for invasive disease include the elderly, immunosuppressed, diabetics, persons with cardiac or respiratory conditions, or persons with skin lesions.

Clinical features:

Signs and symptoms differ depending on the site of the infection and may include fever, severe local pain and tissue destruction, or dizziness, confusion, rash, shock and multiorgan failure.

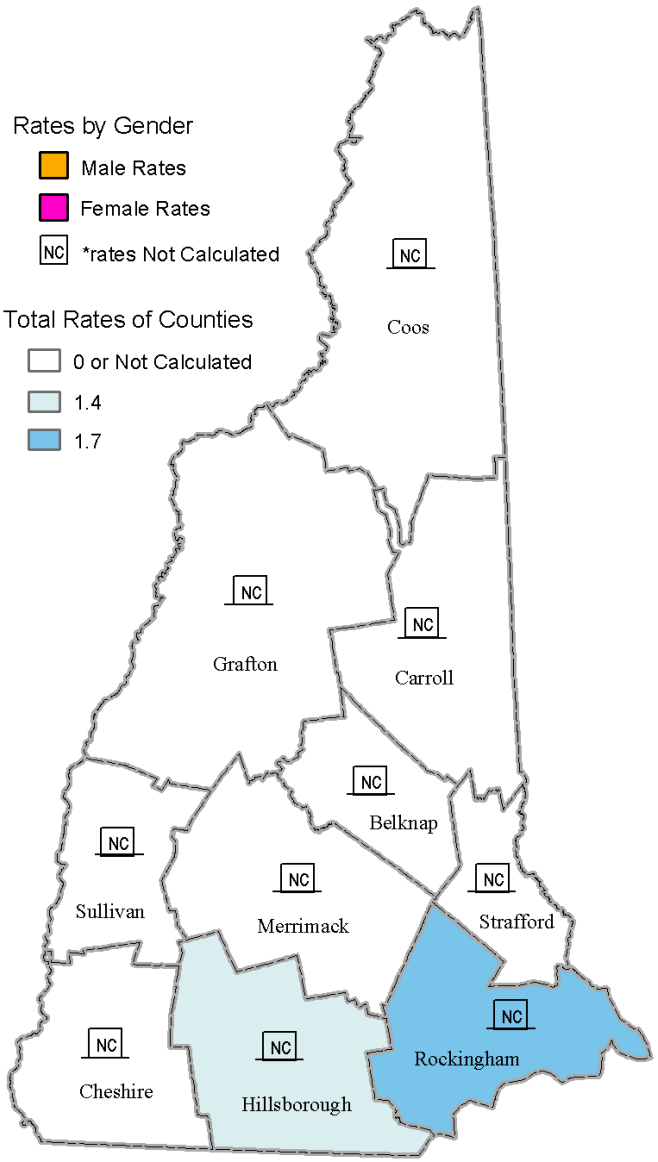
The incubation period for invasive GAS disease is not clearly defined and may depend on the where the infection starts. In some cases, it can be as short as 14 hours.

Disease control methods:

The most important means of controlling GAS disease is prompt identification and treatment because of the potential for rapid disease progression and a fatal outcome.

In addition to antibiotic therapy, supportive care in an intensive care unit is needed for severe cases, and surgical removal of necrotic tissue may be necessary.

Routine prophylactic treatment of contacts is not recommended, but may be appropriate in some cases.



Invasive Group A Streptococcus by County and Gender 1997-2002

	Male		Female		Unk	Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	1	-	2	-		3	-
Carroll	1	-	1	-		2	-
Cheshire	4	-	4	-		8	-
Coos	1	-	1	-		2	-
Grafton	2	-	5	-		7	-
Hillsborough	13	-	14	-	1	28	1.4
Merrimack	4	-	3	-		7	-
Rockingham	14	-	8	-		22	1.7
Strafford	9	-	7	-		16	-
Sullivan	5	-	1	-		6	-
Unknown	1	-	1	-		2	-
Total	55	1.92	47	1.46	1	103	1.65

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Invasive Group A Streptococcus by City

	1997	1998	1999	2000	2001	2002
Manchester	0	1	3	1	0	7
Nashua	0	1	0	0	2	2

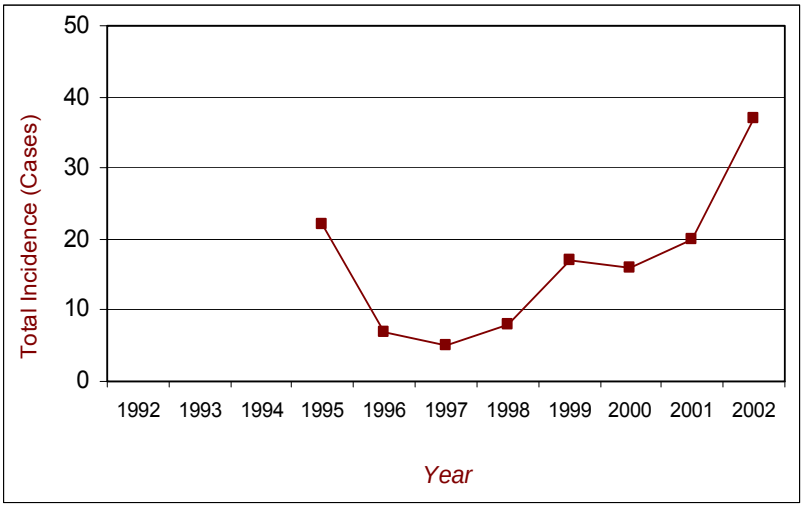
Invasive Group A Streptococcus

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	*nr*	*nr*	*nr*	*nr*
1993	*nr*	*nr*	*nr*	*nr*
1994	*nr*	*nr*	*nr*	*nr*
1995	22	1.9	*nr*	*nr*
1996	7	0.6	*nr*	*nr*
1997	5	0.4	*nr*	*nr*
1998	8	0.7	*nr*	*nr*
1999	17	1.4	*nr*	*nr*
2000	16	1.3	*nr*	*nr*
2001	20	1.6	*nr*	*nr*
2002	37	2.9	*nr*	*nr*

* :Crude rates per 100,000 persons

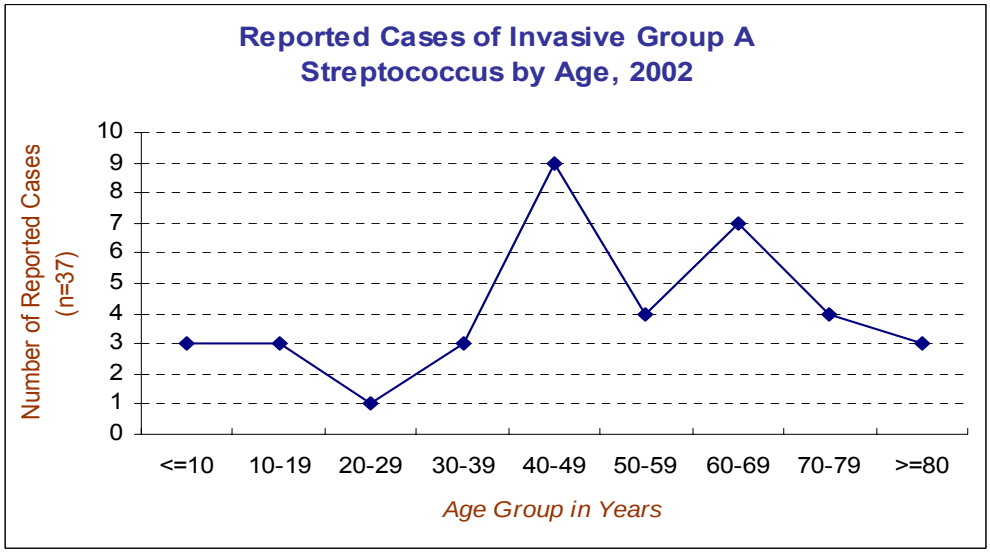
nr :Non reportable

Invasive Group A Streptococcus Incidence New Hampshire: 1992-2002



Comments:

In 2002, the number of reported cases of invasive GAS increased from the number of cases reported in the preceding years. The highest number of cases occurred in persons between 40 and 49 years of age, while the second highest number occurred in persons from 60 to 69 years of age, a known high risk group for this disease. It is not clear whether there is a true increase in cases, or if the numbers reflect better reporting of cases in 2002.



For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

Epidemiology:

Legionellosis is an infectious disease caused by the bacterium, *Legionella pneumophila*. There are two forms of the disease: Pontiac fever and Legionnaires disease. Legionnaires disease most often occurs as a single case but outbreaks attract widespread media attention.

The *Legionella* bacterium naturally inhabit water and have been found in many types of water systems including water cooling towers, decorative fountains, evaporative condensers of large air conditioner systems, shower heads, and whirlpool spas. The bacteria thrive in warm, stagnant water. Humans are infected when they inhale the mist containing *Legionella*.

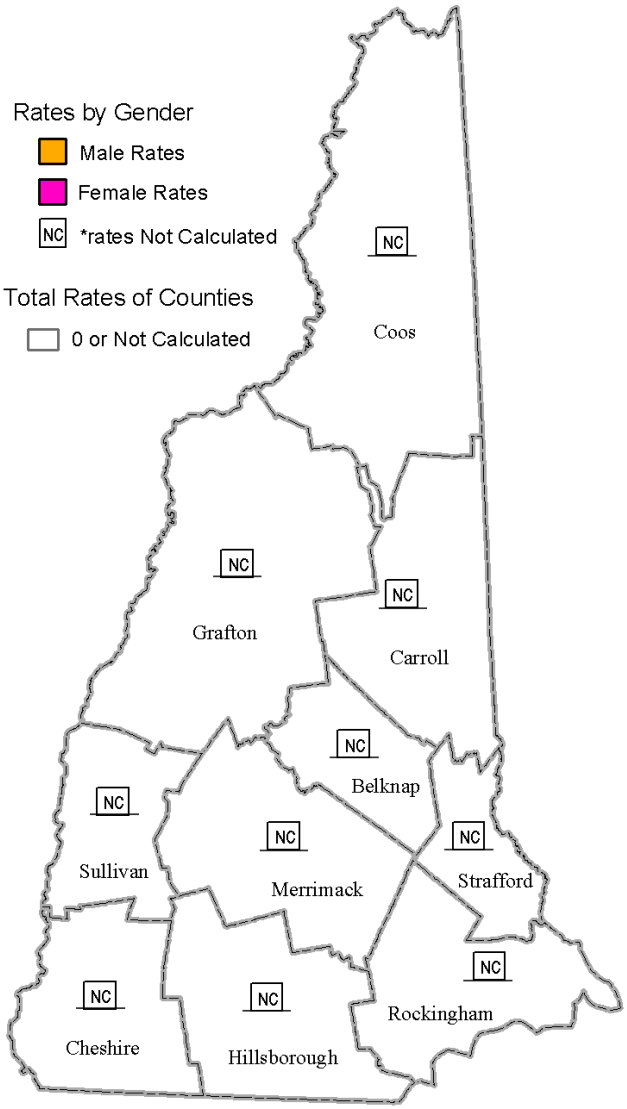
Clinical features:

Pontiac fever has an incubation period of a few hours to two days and is characterized by fever and muscle aches. It generally lasts 2 to 5 days. Legionnaires disease is more serious. After an incubation period of 2 to 10 days, patients develop fever, chills, and a cough, and may also have headache, muscle aches, and fatigue. Patients can develop pneumonia and kidney problems as well. While some people can be infected with the *Legionella* bacteria and have no symptoms at all, cigarette smokers, people with chronic lung disease, and people who are immunosuppressed are at increased risk for developing Legionnaires disease. There is no evidence that Legionnaires disease can be transmitted person to person.

Disease control methods:

Patients with Pontiac fever usually recover with no specialized treatment. Antibiotics are used to treat patients with Legionnaires disease.

Preventative measures include regular maintenance of water and plumbing systems to eliminate the bacteria. The use of biocides in water systems and draining cooling towers that are not in use will limit the growth of the bacteria.



Legionellosis by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	0	-	0	-		0	-
Carroll	1	-	0	-		1	-
Cheshire	4	-	2	-		6	-
Coos	0	-	0	-		0	-
Grafton	3	-	0	-		3	-
Hillsborough	12	-	6	-		18	-
Merrimack	2	-	0	-		2	-
Rockingham	7	-	2	-		9	-
Strafford	2	-	4	-		6	-
Sullivan	2	-	0	-		2	-
Unknown		-		-			-
Total	33	1.17	14	-		47	0.80

** : Age adjusted standardized rates per 100,000 persons*
- : rates not calculated on counts <20

Legionellosis by City

	1997	1998	1999	2000	2001	2002
Manchester	0	0	1	1	3	2
Nashua	0	1	1	0	0	0

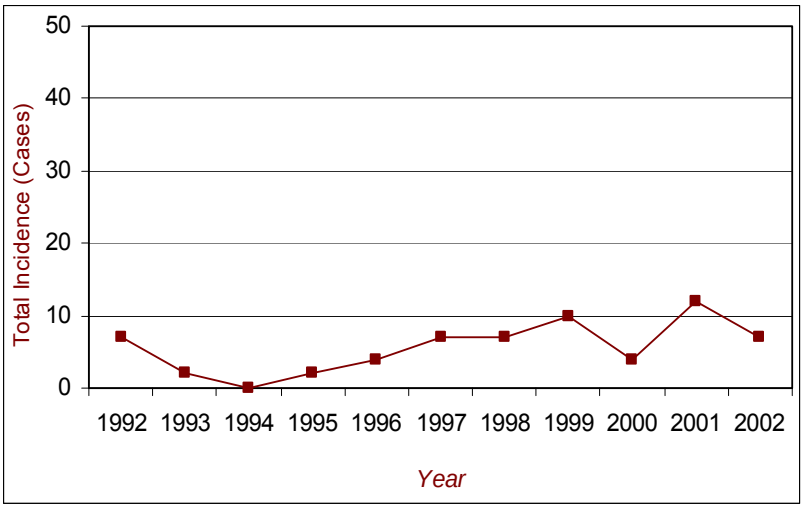
Legionellosis

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	7	0.6	1,339	0.5
1993	2	-	1,280	0.5
1994	0	0.0	1,615	0.6
1995	2	-	1,241	0.5
1996	4	-	1,198	0.5
1997	7	0.6	1,163	0.4
1998	7	0.6	1,355	0.5
1999	10	0.8	1,108	0.4
2000	4	-	1,127	0.4
2001	12	1.0	1,168	0.4
2002	7	0.6	1,321	0.5

* :Crude rates per 100,000 persons

\- :No rates calculated on counts <5

Legionellosis Incidence
New Hampshire: 1992-2002



For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

Epidemiology:

Lyme disease was first discovered in the late 1970s when a cluster of children in and around Lyme, Connecticut developed arthritis-like symptoms. The bacterium that causes Lyme disease, *Borrelia burgdorferi*, is transmitted to humans through the bite of an infected deer tick. In the United States, most cases occur in the northeast and mid-Atlantic states. There is also a heavy concentration of cases in Wisconsin and some counties in northern California. Most cases occur in late spring and summer when the nymphal ticks are most active and people spend more time outdoors.

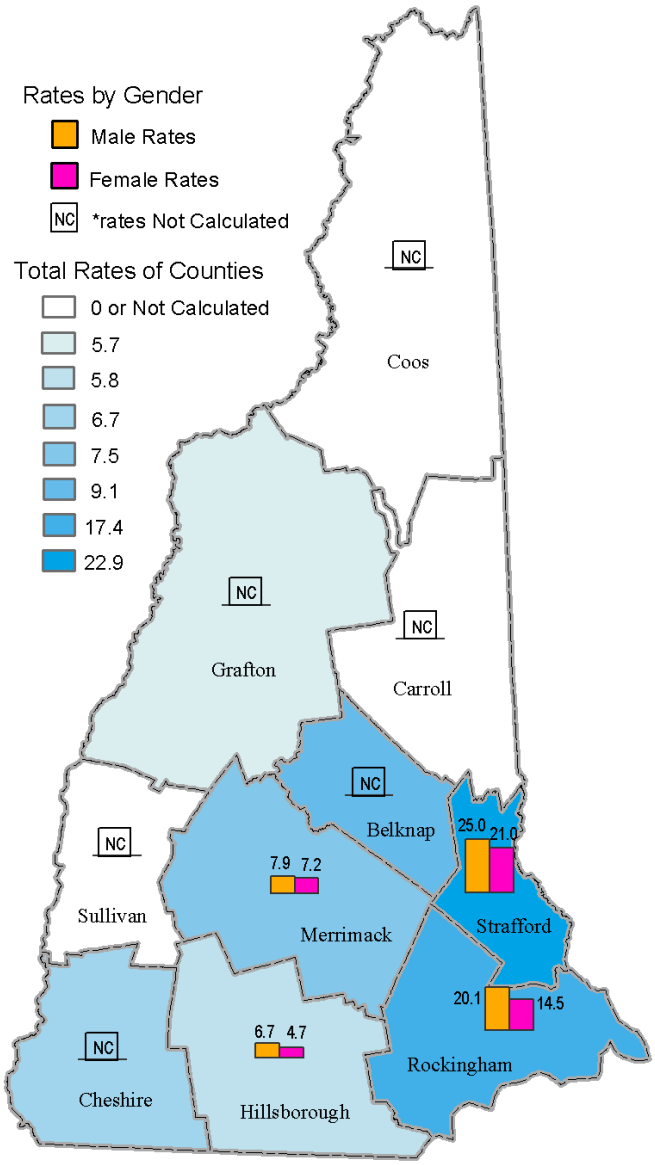
Clinical features:

Lyme Disease usually presents with a characteristic "bull's eye" rash and is accompanied by fever, fatigue, headache, and muscle and joint aches. The incubation period from tick bite to development of the rash can be 3 to 32 days but the average is 7 to 14 days. Some individuals can develop symptoms at a later stage without having any rash. If left untreated, chronic neurological and cardiac abnormalities can develop. There is no evidence that Lyme disease can be transmitted person to person.

Disease control methods:

Up to 4 weeks of oral antibiotics are prescribed for the early stages of Lyme disease. For later stages, IV antibiotics are recommended. The failure rate can be high and retreatment may be necessary.

There are several actions that can be taken to reduce the risk of tick bites: 1) avoid tick infested areas; 2) wear long sleeves and long pants when walking in heavily wooded areas; 3) tuck pants into socks to minimize the chance of ticks reaching skin; 4) wear light colored clothing so that ticks can be easily spotted and removed; 5) apply insect repellent containing DEET to clothes and exposed skin.



Lyme by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	13	-	9	-		22	9.1
Carroll	3	-	14	-		17	-
Cheshire	11	-	11	-		22	6.7
Coos	6	-	6	-		12	-
Grafton	5	-	15	-		20	5.7
Hillsborough	59	6.7	40	4.7		99	5.8
Merrimack	23	7.9	21	7.2		44	7.5
Rockingham	132	20.1	94	14.5		226	17.4
Strafford	64	25.0	54	21.0		118	22.9
Sullivan	2	-	3	-		5	-
Unknown		-		-			-
Total	318	11.41	267	9.51		585	10.46

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Lyme by City

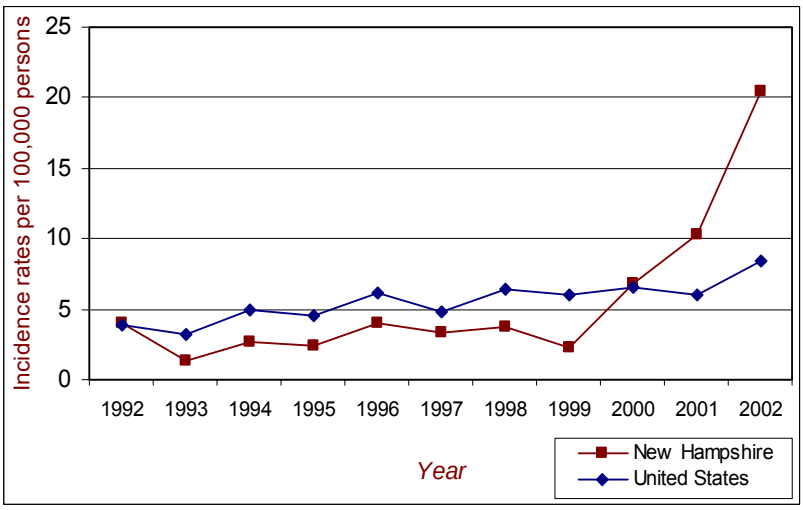
	1997	1998	1999	2000	2001	2002
Manchester	1	0	0	5	3	7
Nashua	2	5	1	6	4	11

Lyme Disease

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	44	4.0	9,895	3.9
1993	15	1.3	8,257	3.2
1994	30	2.6	13,043	5.0
1995	28	2.4	11,700	4.5
1996	47	4.0	16,455	6.2
1997	39	3.3	12,801	4.8
1998	45	3.8	16,801	6.4
1999	27	2.2	16,273	6.0
2000	84	6.8	17,730	6.5
2001	129	10.2	17,029	6.1
2002	261	20.5	23,763	8.4

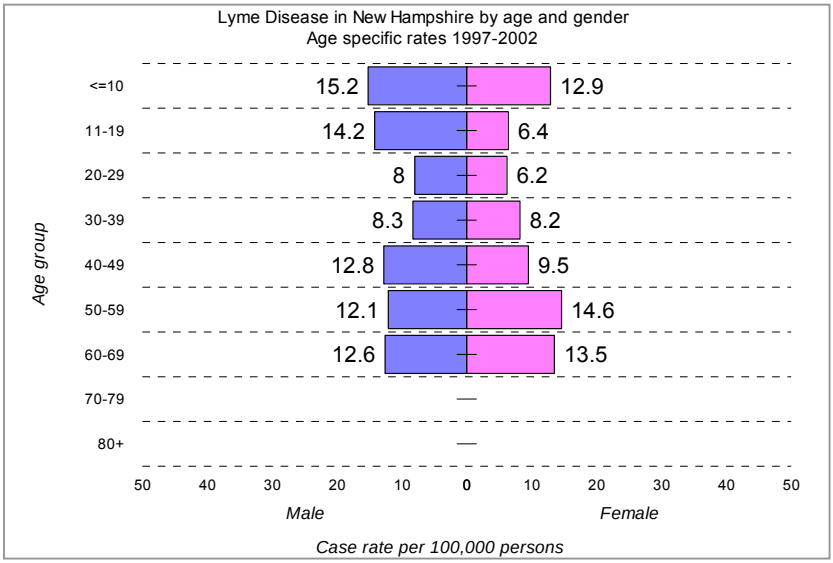
* :Crude rates per 100,000 persons

Lyme Disease Incidence Rates
New Hampshire and the United States: 1992-2002



Comments:

- New Hampshire's Lyme disease incidence rate was higher than the national average in both 2001 and 2002.
- Rockingham County is one of 53 counties nationally reporting >100 cases of Lyme disease in 2002.



For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

Epidemiology:

Meningococcal meningitis is a bacterial meningitis caused by the organism *Neisseria meningitidis*. The organism infects the fluid of the brain and spinal cord. Some people carry the bacteria in the back of their nose and throat and have no symptoms. Occasionally, the bacteria can progress to cause illness in these people. The disease is also spread by direct contact (kissing or sharing drinking containers) with oral secretions of persons who carry the bacteria or by being exposed to the bacteria from coughing or sneezing. Identification of the bacteria or virus causing meningitis is accomplished through lab analysis of spinal fluid and is necessary in order for the appropriate treatment to be prescribed. While viral meningitis is usually mild, bacterial meningitis can result in brain damage, hearing loss, and even death.

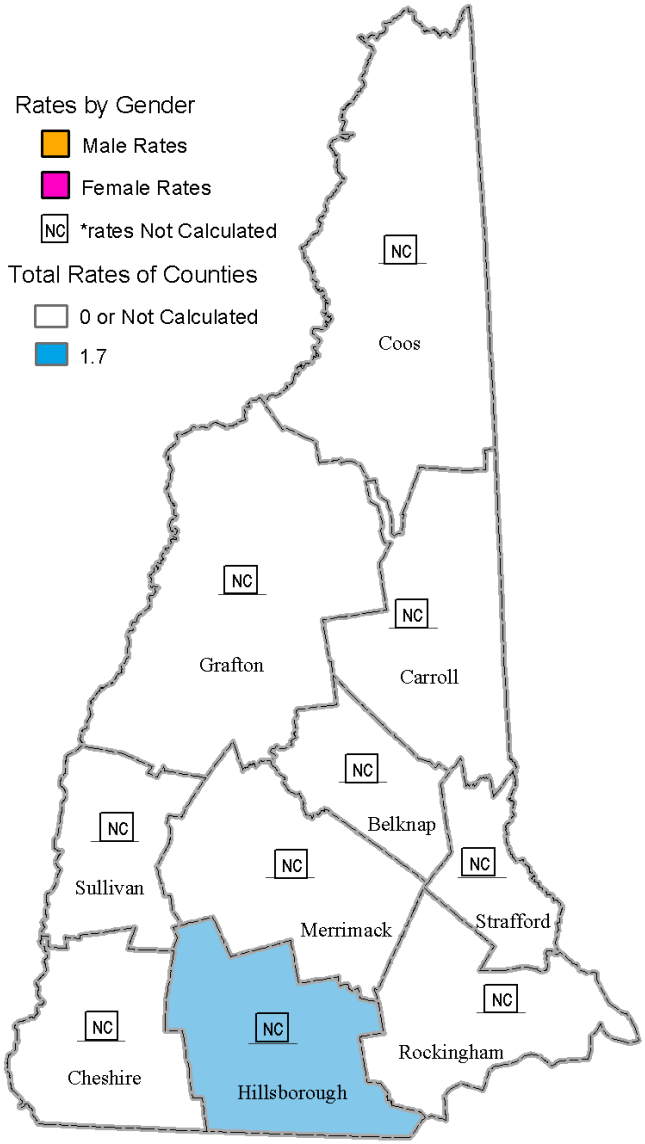
College freshman living in dormitories have a slightly higher incidence of contracting meningococcal meningitis than others in the same age group.

Clinical features:

Symptoms of meningitis are high fever, stiff neck and headache. Many patients also develop a rash. Vomiting, diarrhea, sleepiness, and confusion may also occur. The incubation period can be from 2 to 10 days. Symptoms can develop rapidly, within hours, or take 1 or 2 days.

Disease control methods:

Early diagnosis of *Neisseria meningitidis* and prompt administration of appropriate antibiotics greatly reduces the risk of serious complications. Not sharing water bottles and other drinking containers reduces the risk of contracting the disease. There is a vaccine for some strains of *Neisseria meningitidis* but it is not given routinely in the United States.



Neisseria meningitidis by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	4	-	2	-		6	-
Carroll	0	-	0	-		0	-
Cheshire	2	-	7	-		9	-
Coos	1	-	0	-		1	-
Grafton	5	-	2	-		7	-
Hillsborough	14	-	16	-		30	1.7
Merrimack	4	-	2	-		6	-
Rockingham	10	-	5	-		15	-
Strafford	5	-	2	-		7	-
Sullivan	1	-	0	-		1	-
Unknown		-		-			-
Total	46	1.57	36	1.20		82	1.41

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Neisseria meningitidis by City

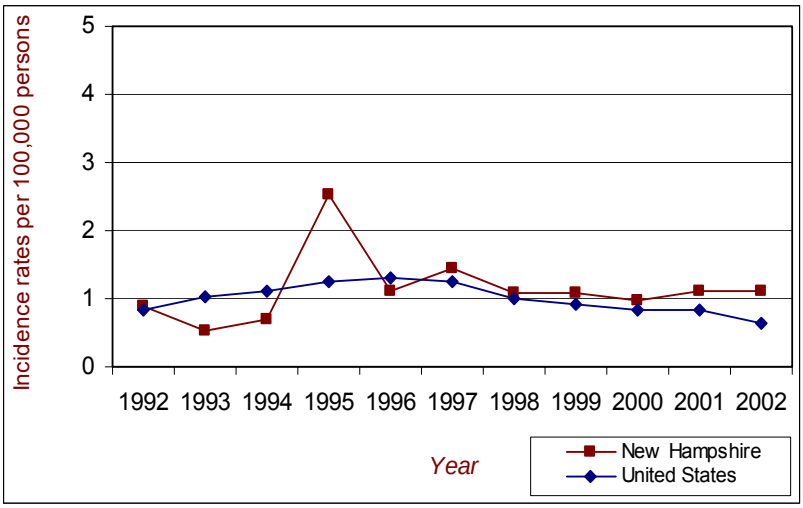
	1997	1998	1999	2000	2001	2002
Manchester	2	4	2	0	3	1
Nashua	2	1	2	4	0	2

Neisseria meningitidis

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	10	0.9	2134	0.8
1993	6	0.5	2637	1.0
1994	8	0.7	2886	1.1
1995	29	2.5	3243	1.3
1996	13	1.1	3437	1.3
1997	17	1.4	3308	1.2
1998	13	1.1	2725	1.0
1999	13	1.1	2501	0.9
2000	12	1.0	2256	0.8
2001	14	1.1	2,333	0.8
2002	14	1.1	1,814	0.6

* :Crude rates per 100,000 persons

***Neisseria meningitidis* Incidence Rates**
New Hampshire and the United States: 1992-2002



For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

Epidemiology:

Pertussis, or whooping cough, is an acute infectious disease of the respiratory tract. It is caused by the bacterium *Bordetella pertussis*, and is transmitted from person to person through contact with respiratory secretions of an infected person. Pertussis occurs worldwide and outbreaks were first described in the 1500's. Since widespread use of pertussis vaccine, developed in the 1940's, incidence of pertussis has decreased dramatically.

Young infants are at highest risk of acquiring pertussis, or pertussis-related complications.

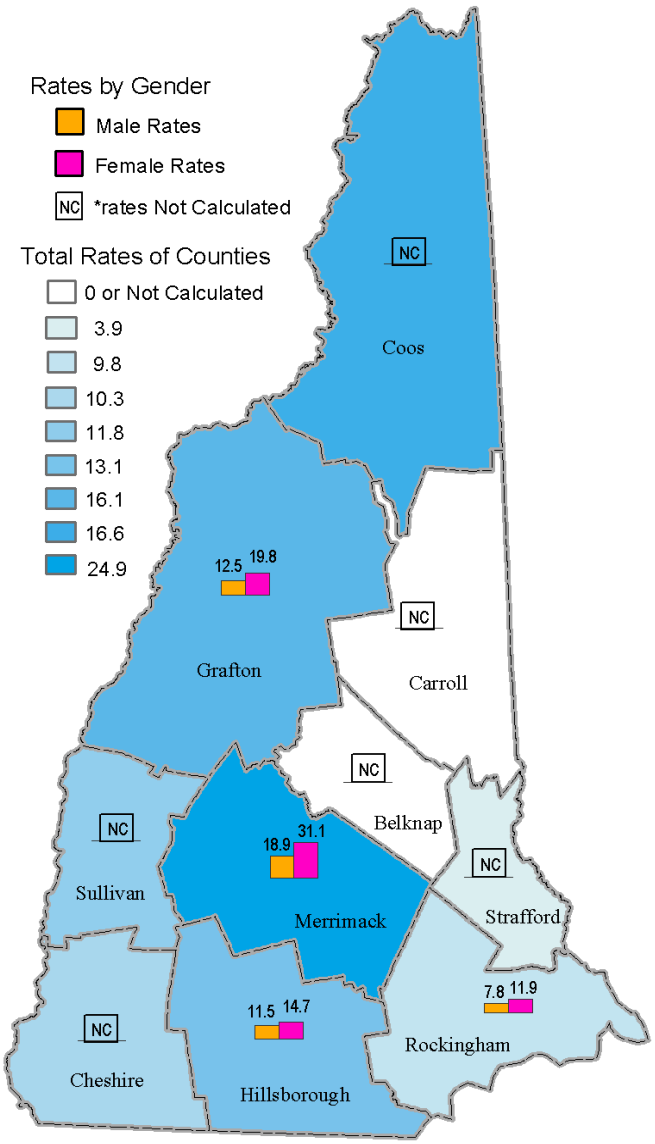
Clinical features:

The clinical course of pertussis is divided into three stages. The catarrhal stage is characterized by mild upper respiratory tract symptoms, similar to the common cold and lasts 1-2 weeks. Mild symptoms progress to severe paroxysms of coughing (paroxysmal stage), often with a characteristic high-pitched whoop, followed by vomiting and exhaustion. The paroxysmal stage lasts 1-6 weeks. Symptoms subside gradually during the convalescent stage, which may last weeks to months.

The incubation period is usually 7 to 10 days, but can range from 4 to 21 days. Pertussis is highly contagious, and persons are most infectious during the catarrhal stage and the first 2 weeks after cough onset (approximately 21 days).

Disease control methods:

Immunizing children at or less than 7 years of age against pertussis, along with diphtheria and tetanus, is recommended to prevent disease. Along with supportive care for symptoms, antibiotic treatment is the method of choice. Hospitalization may be required, especially for infants less than 6 months of age. All household members and close contacts should be treated with a 14-day course of antibiotics.



Pertussis by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	4	-	8	-		12	-
Carroll	4	-	6	-		10	-
Cheshire	18	-	17	-		35	10.3
Coos	8	-	15	-		23	16.6
Grafton	24	12.5	37	19.8		61	16.1
Hillsborough	97	11.5	126	14.7		223	13.1
Merrimack	58	18.9	93	31.1		151	24.9
Rockingham	51	7.8	74	11.9		125	9.8
Strafford	9	-	12	-		21	3.9
Sullivan	11	-	12	-		23	11.8
Unknown		-		-			-
Total	284	10.09	400	14.31		684	12.18

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Pertussis by City

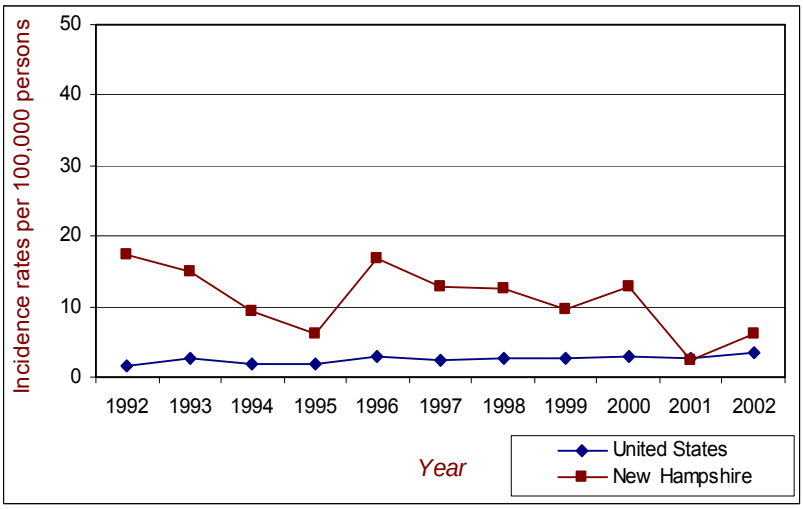
	1997	1998	1999	2000	2001	2002
Manchester	15	10	6	7	3	16
Nashua	18	13	1	7	3	1

Pertussis

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	192	17.3	4,083	1.6
1993	168	14.9	6,586	2.6
1994	107	9.4	4,617	1.8
1995	70	6.1	5,137	2.0
1996	197	17.0	7,796	2.9
1997	150	12.8	6,564	2.5
1998	149	12.6	7,405	2.7
1999	116	9.7	7,288	2.7
2000	159	12.9	7,867	2.9
2001	31	2.5	7,580	2.7
2002	78	6.1	9,771	3.5

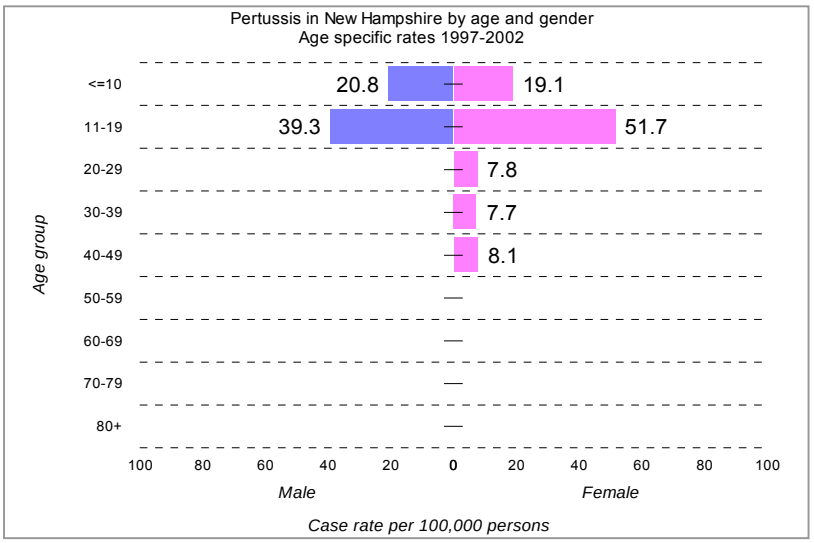
* :Crude rates per 100,000 persons

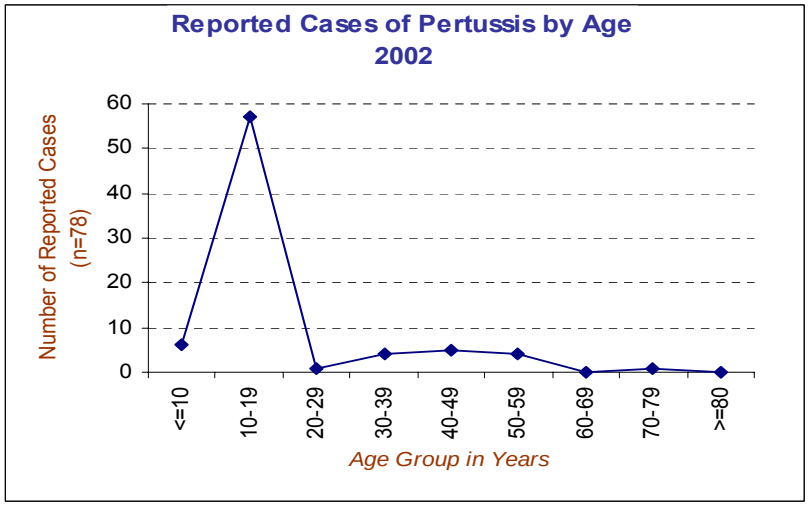
Pertussis Incidence Rates
New Hampshire and the United States: 1992-2002



Comments:

- Pertussis is observed to occur in 3-5 year cycles. A dramatic decrease in the number of reported pertussis cases was seen in 2001, as compared to the number reported for the previous five years. In 2002, the number increased from the number reported in 2001, but was still less than the number of cases reported from 1996 through 2000. Pertussis cases will continue to be monitored to see if a new trend is emerging.
- In 2002, while reported cases were seen in most age groups, the largest number was for persons 11 to 19 years of age. Reported outbreaks occurred in several middle/high schools during 2002. This may reflect a true increase in pertussis incidence in that age group, or increased reporting of cases.





For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Immunization Program at 1-800-852-3345 ext 4482.

Epidemiology:

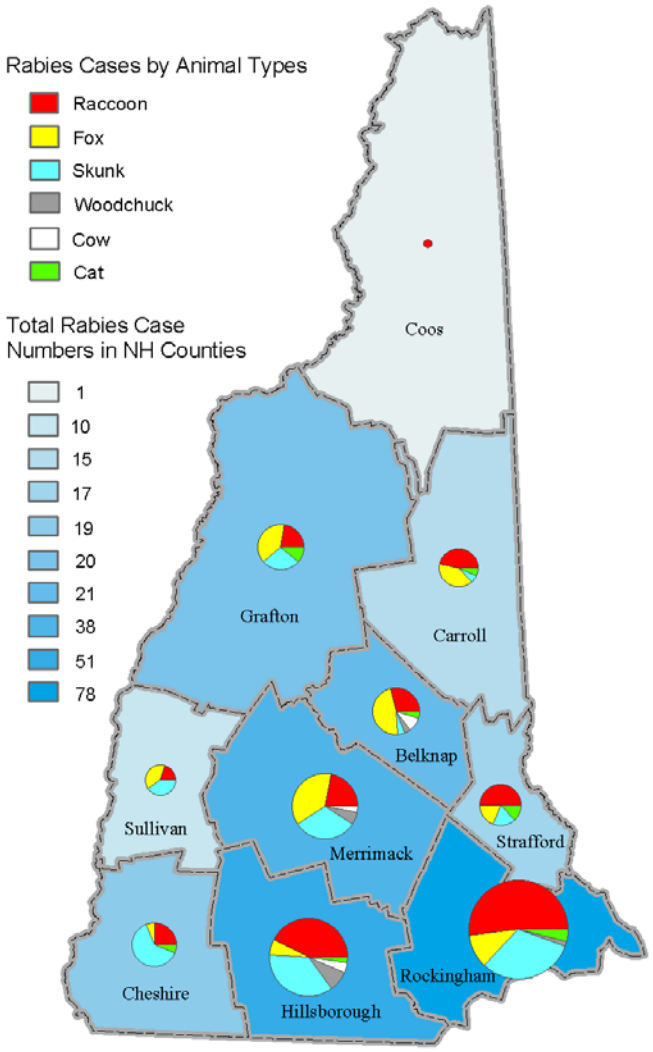
Rabies is a viral disease that attacks the central nervous system. It can be transmitted to people through contact with the saliva or brain and spinal cord tissue of a rabid animal. The rabid animal's infectious saliva gets through a person's flesh as it bites, or infectious saliva, brain or spinal cord tissue from a rabid animal comes into contact with the lining of a person's eye, nose or mouth or with a recent cut, abrasion or other break in the person's skin.

Clinical features:

Symptoms of rabies in people include apprehension, headaches, fever, tiredness, paralysis, muscle spasm in the throat leading to fear of water, delirium, and convulsions. In almost all cases, it is fatal for humans but may be effectively prevented with vaccination. There is no cure for rabies once the infected person becomes ill with the disease. There is, however, a highly effective series of shots against rabies given either before and/or right after a rabies exposure to prevent the disease. People whose work or hobbies bring them into frequent contact with potentially rabid animals should have a series of three rabies vaccine shots before they are exposed. They would then require only two vaccine shots after exposure.

Disease control methods:

If a person is bitten or has a non-bite exposure, wash the wound thoroughly with soap and water for 10 minutes. (Note: flush an exposed eye, nose or mouth with water or saline for 10 minutes.) This is extremely important as it may effectively wash away the rabies virus and prevent infection. The person should then be seen immediately by a physician or go to an emergency department for examination and any needed treatment.



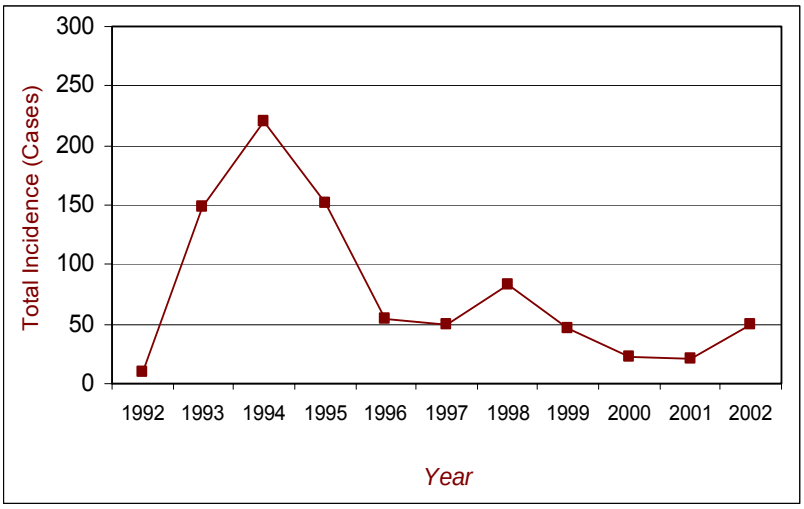
Rabies in NH by County and Animal, 1997-2002

County	Total	BAT	BOBCAT	CAT	COW	FOX	RACCOON	SKUNK	WOODCHUCK
BELKNAP	**21**			1	2	10	6	1	1
CARROLL	**15**			1		6	7	1	
CHESHIRE	**19**	3		1		1	4	10	
COOS	**1**						1		
GRAFTON	**20**	1	1	2		7	4	5	
HILLSBOROUGH	**51**	4		1	2	3	20	17	4
MERRIMACK	**38**	6			1	12	7	10	2
ROCKINGHAM	**78**	5		3		8	38	23	1
STRAFFORD	**17**	1		2		3	8	3	
SULLIVAN	**10**					4	2	4	
	270	**20**	**1**	**11**	**5**	**54**	**97**	**74**	**8**

Rabies

	New Hampshire		United States	
	Animals	Humans	Animals	Humans
1992	10	0	8,589	1
1993	148	0	9,377	3
1994	221	0	8,147	6
1995	152	0	7,811	5
1996	54	1	6,982	3
1997	49	0	8,105	2
1998	83	0	7,259	1
1999	47	0	6,730	0
2000	23	0	6,934	4
2001	21	0	7,150	1
2002	47	0	7,609	0

Rabies in Animals Incidence New Hampshire: 1992-2002



Comments:

- The sharp rise in animal rabies cases represents a mid-Atlantic strain affecting raccoons. This began in Georgia in the previous years, migrated north through the mid-Atlantic states and eventually peaked in New Hampshire in 1994.
- There were no human cases associated with the influx of the mid-Atlantic strain. In the past ten years, there has only been one case of human rabies. This case originated in Nepal via a dog bite.

Precautions:

- Vaccinate all dogs and cats against rabies and make sure their shots are up-to-date.
- Do not handle wild animals. Teach children to avoid wildlife, strays and all other unfamiliar animals.
- Keep trash containers tightly closed. Garbage attracts animals like skunks and raccoons.
- All bites by wild animals or contact with their saliva or brain and spinal cord tissue must be considered as possible exposure to rabies and must be evaluated medically.
- Do not handle dead, sick or injured wild animals. Call the local animal control officer or the New Hampshire Fish and Game Department at 603-271-3361.
- If bitten by a wild or domestic animal, seek medical attention immediately and notify the local animal control officer.
- If a dog, cat or other pet has been injured by another animal, handle it only with thick rubber gloves and have it examined by a veterinarian right away. Saliva from an attacking rabid animal remains infectious on the attacked pet's fur until it has thoroughly dried out.

For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

Epidemiology:

Salmonellosis is a bacterial diarrheal illness caused by *Salmonella*. *Salmonella* lives in the intestinal tracts of humans and other animals, including birds. The microorganism is transmitted to humans mainly by eating contaminated food of animal origin. The most commonly recognized vehicles are beef, poultry, milk and eggs. Another recognized source of infections is reptiles.

Clinical features:

The incubation period is between 6-72 hours and duration of illness is about one week.

Symptoms include headache, abdominal pain, diarrhea, nausea and sometimes vomiting.

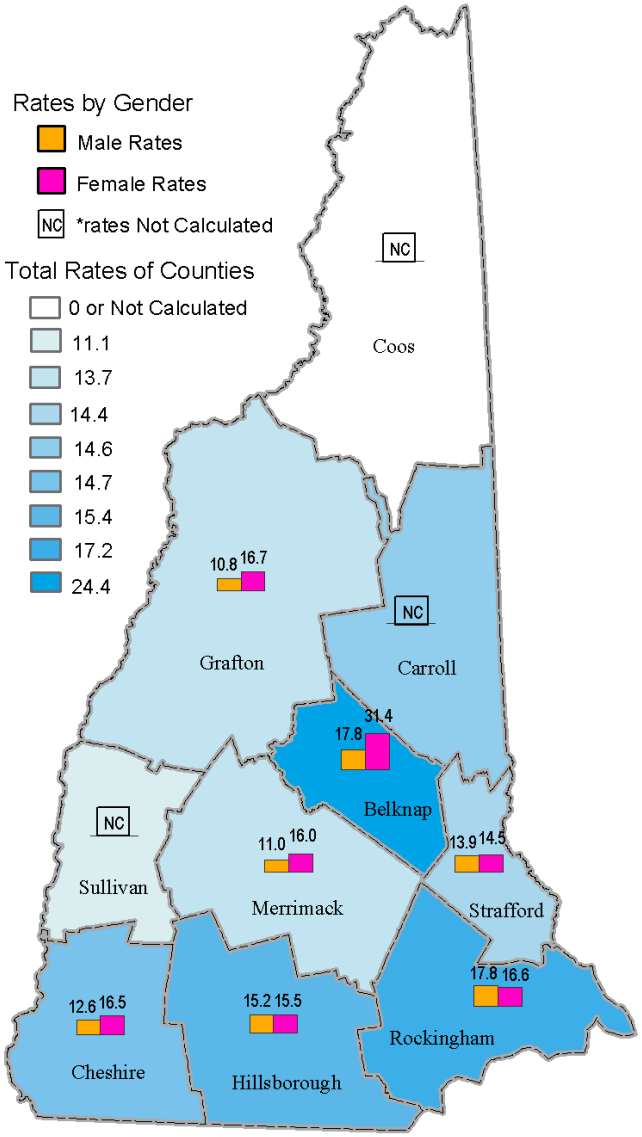
The elderly, infants and immunocompromised individuals are at risk of developing a generalized illness, which requires hospitalization and prompt treatment with antibiotics.

A small number of persons may develop chronic arthritis several months later.

Disease control methods:

Treatment includes rehydration and electrolyte replacement. Antibiotic therapy is recommended for infants, elderly or debilitated patients with prolonged illness or complications.

Meat and egg products should be thoroughly cooked to help prevent salmonellosis. People who have salmonellosis should not prepare food or pour water for others. Reptiles, including turtles, should be avoided as pets for infants and small children.



Salmonellosis by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	24	17.8	41	31.4		65	24.4
Carroll	15	-	14	-		29	14.6
Cheshire	22	12.6	31	16.5		53	14.7
Coos	7	-	12	-		19	-
Grafton	21	10.8	32	16.7		53	13.7
Hillsborough	139	15.2	145	15.5		284	15.4
Merrimack	37	11.0	52	16.0		89	13.7
Rockingham	126	17.8	114	16.6		240	17.2
Strafford	37	13.9	42	14.5		79	14.4
Sullivan	9	-	14	-		23	11.1
Unknown		-	2	-		2	-
Total	437	14.59	499	16.41		936	15.54

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Salmonellosis by City

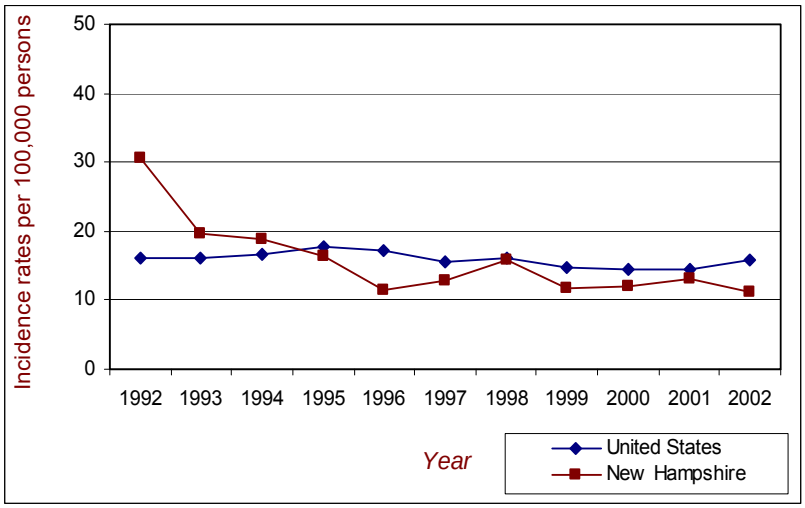
	1997	1998	1999	2000	2001	2002
Manchester	11	14	14	6	15	11
Nashua	16	13	6	12	18	16

Salmonellosis

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	339	30.5	40,912	16.0
1993	220	19.6	41,641	16.2
1994	213	18.7	43,323	16.6
1995	188	16.4	45,970	17.7
1996	133	11.4	45,471	17.2
1997	151	12.9	41,901	15.7
1998	187	15.8	43,694	16.2
1999	141	11.7	40,596	14.9
2000	148	12.0	39,574	14.5
2001	166	13.2	40,495	14.4
2002	142	11.2	44,264	15.7

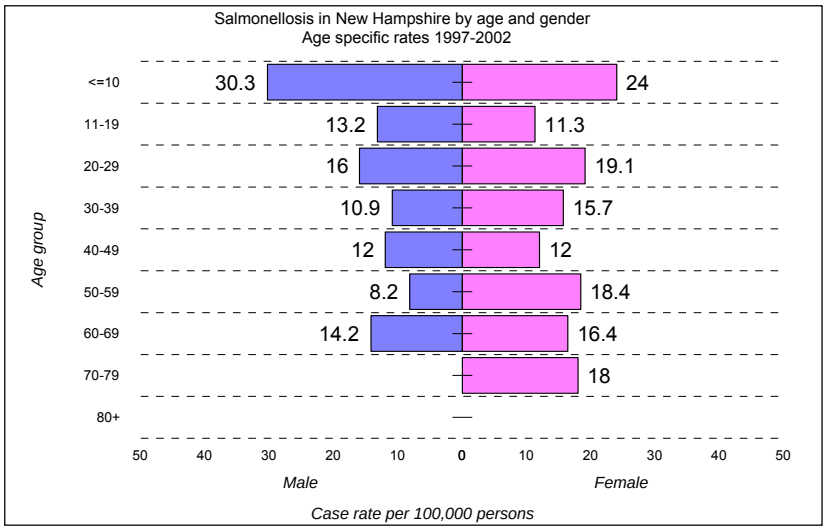
* :Crude rates per 100,000 persons

Salmonellosis Incidence Rates
New Hampshire and the United States: 1992-2002



Comments:

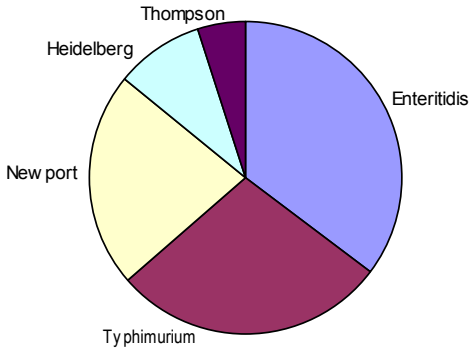
The five most frequently reported *Salmonella* serotypes from human sources confirmed by the public health lab in 2002 are shown in the table below.



Salomonella Serotypes 2002

Rank	Serotype	Number	Percent of total
1	Enteritidis	35	24.6%
2	Typhimurium	28	19.7%
3	Newport	22	15.5%
4	Heidelberg	9	6.3%
5	Thompson	5	3.5%

Based on 142 cases of Salmonella reported in 2002



For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

Epidemiology:

Tuberculosis (TB) disease, an airborne, bacterial illness caused by *mycobacterium tuberculosis*, primarily affects the lungs, but can spread to any part of the body. It is one of the leading infectious disease killers worldwide, causing approximately 2 million deaths annually. Estimates are that 1/3rd of the world population is infected with TB. In the United States, racial and ethnic groups are over-represented. In recent years, the foreign-born account for approximately 50% of the cases.

Clinical features:

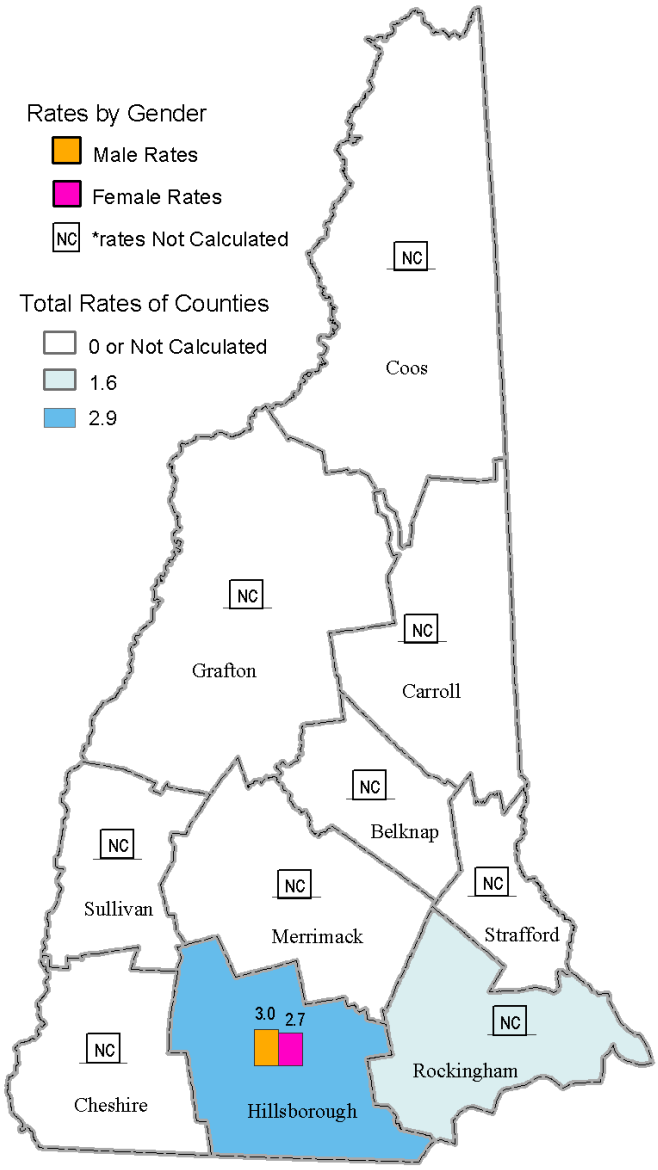
Symptoms of disease include cough, fever, weight loss, night sweats, and fatigue. A positive tuberculin skin test and abnormal chest x-ray are common. Most people with pulmonary disease are initially contagious, until they are on proper treatment.

TB can be transmitted by inhaling bacteria sprayed into the air when a person with disease coughs. Usually, this results in latent TB infection (LTBI). A person with LTBI has a positive skin test, normal CXR, and is asymptomatic. 10% of those infected will develop TB disease in their lifetime. The risk of developing disease is highest in the first two years after infection occurs. Immuno-compromised persons have a higher risk of developing disease.

Disease control methods:

Prompt diagnosis and completion of 6-9 months of appropriate treatment can prevent LTBI from progressing to active TB disease, as well as cure people who are sick with disease. People with disease are isolated while contagious to prevent spread to others.

Targeted testing and treatment of LTBI in high-risk groups will prevent future cases and facilitate TB elimination.



Tuberculosis by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	4	-	1	-		5	-
Carroll	1	-	0	-		1	-
Cheshire	2	-	1	-		3	-
Coos	2	-	1	-		3	-
Grafton	1	-	0	-		1	-
Hillsborough	26	3.0	26	2.7		52	2.9
Merrimack	5	-	3	-		8	-
Rockingham	11	-	11	-		22	1.6
Strafford	4	-	8	-		12	-
Sullivan	2	-	2	-		4	-
Unknown		-		-			-
Total	58	2.08	53	1.69		111	1.86

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

Tuberculosis Disease by City

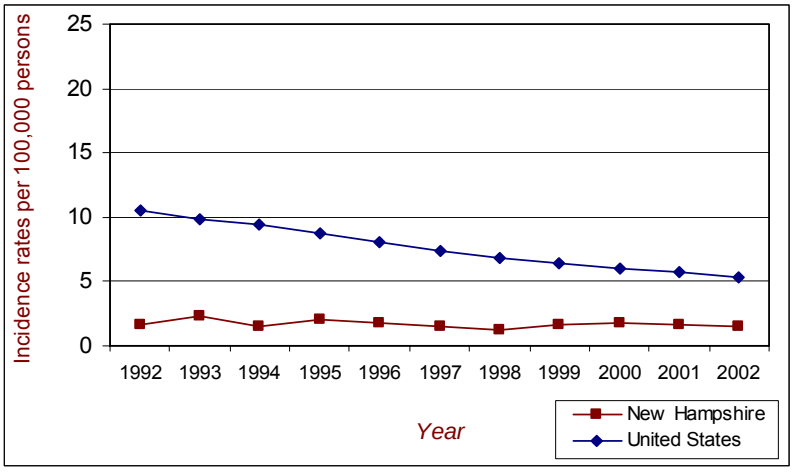
	1997	1998	1999	2000	2001	2002
Manchester	3	1	1	4	3	3
Nashua	5	3	2	5	3	5

Tuberculosis Disease

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	18	1.6	26,673	10.5
1993	26	2.3	25,313	9.8
1994	17	1.5	24,361	9.4
1995	23	2.0	22,860	8.7
1996	21	1.8	21,337	8.0
1997	17	1.4	19,851	7.4
1998	14	1.2	18,361	6.8
1999	19	1.6	17,531	6.4
2000	22	1.8	16,377	6.0
2001	20	1.6	15,989	5.7
2002	19	1.5	15,075	5.4

* :Crude rates per 100,000 persons

Tuberculosis Disease Incidence Rates New Hampshire and the United States: 1992-2002



Comments:

- Nationally, in 2002, there were 15,075 (5.4 per 100,000 population) cases of TB in the US. This represents a 43.5% decline from the 1992 peak of the resurgence of TB.
- In 2002, New Hampshire had the 7th lowest TB incidence and 9th lowest case rate in the nation and was one of only 7 states in the nation with at least 70 % of the cases in foreign-born persons.
- The most noteworthy epidemiologic change in NH is the recent increase in TB in foreign-born persons. Aggregate data from 1990-1999 shows that 37% of NH cases occurred in this population. In each of the past three years, the proportion of foreign-born cases accounted for at least 75 % of the cases and is responsible for 63% of all cases between 1998 and 2002.
- Racial and ethnic minorities are well over-represented with TB in New Hampshire where 4% of the total population falls within these groups. Minority groups accounted for 56% of all TB cases between 1998 and 2002.
- In the past five years, one person was diagnosed with both AIDS and active TB.

NH Tuberculosis Cases by Country of Origin 1998 - 2002

	U.S.-born	Foreign-born	Total
1998	9	5	14
1999	12	7	19
2000	5	17	22
2001	5	15	20
2002	4	15	19
Total	35 (37%)	59 (63%)	94

42 % of foreign-born persons were born in India, Indonesia, or the Philippines.

Tuberculosis Cases by Age at Diagnosis and Country of Origin, 1998 - 2002

	U.S.-born	Foreign-born	Total
< 15	2	4	6
15-24	2	12	14
25-44	4	32	36
45-64	12	7	19
65+	15	4	19
Total	35	59	94

64% of foreign-born persons arrived in the U.S. within the previous five years. Over half (54%) of them were ages 25-44 at the time of diagnosis compared to only 11% of US-born cases. 43% of US-born cases were age ≥ 65 at the time of diagnosis compared to 7% of foreign-born cases.

Tuberculosis Cases by County and Country of Origin 1998 - 2002

	U.S.-born	Foreign-born	Total
Belknap	3	2	5
Carroll	1	0	1
Cheshire	1	1	2
Coos	2	0	2
Grafton	1	0	1
Hillsborough	9	29	38
Merrimack	4	4	8
Rockingham	11	10	21
Strafford	2	11	13
Sullivan	1	2	3
Total	35	59	94

TB is more commonly found in the southeastern counties of the the state. In 2002, six of ten counties reported no TB cases, but 18/19 cases occurred in the counties of Hillsborough, Rockingham and Strafford. 77% of NH cases between 1998 and 2002 occurred within these three counties while five other counties had ≤ 3 cases each.

For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Tuberculosis Program at 1-800-852-3345 ext 4469.

Epidemiology:

Enterococci are bacteria that are found in the gastrointestinal and genital tracts of normal, healthy people. These bacteria can occasionally cause infections, most commonly, urinary tract and wound infections. Vancomycin resistant enterococci (VRE) are bacteria that are resistant to most antibiotics used to treat enterococcal infections. In 1988, the first case of VRE was reported in Europe and the following year, the first case of VRE was identified in the United States. VRE has been associated with the use of subtherapeutic antibiotics given to farm animals to increase the meat supply, a common practice in some areas of England and other European countries.

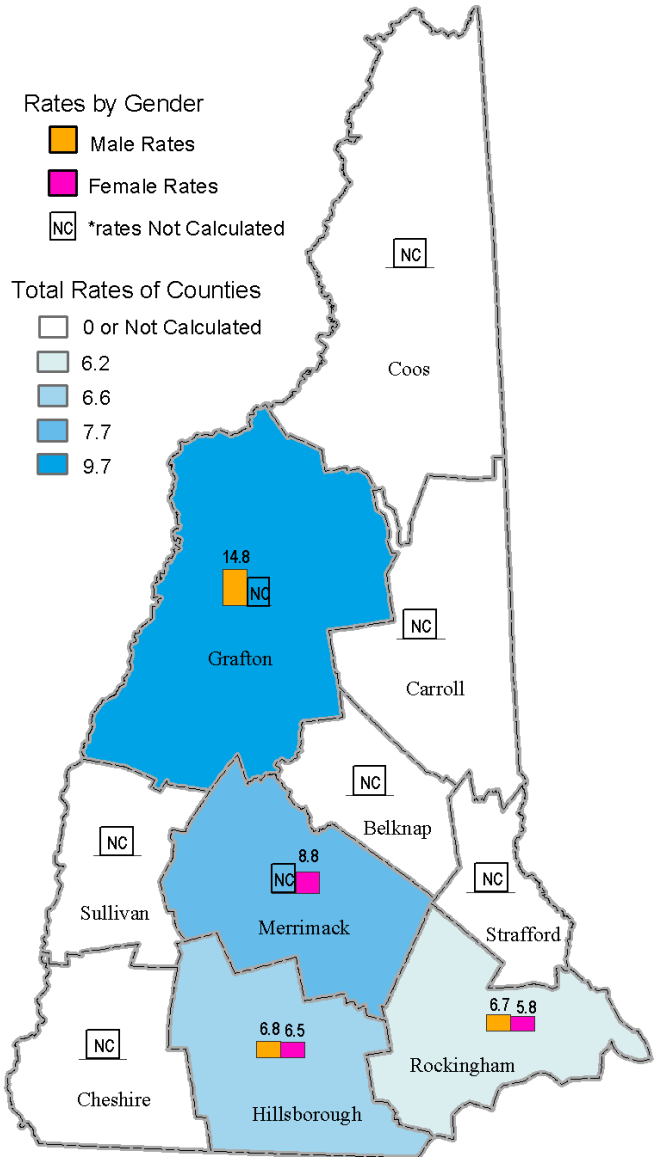
It is thought that humans may acquire VRE by eating meat from animals that harbor VRE. Humans can be affected by VRE in two ways, either colonization or infection. Colonization refers to people who carry the organism but have no signs or symptoms. People infected with VRE will be ill. Patients who have been treated with antibiotics and hospitalized for an extended time and people who have previously been treated with vancomycin are at the highest risk for developing VRE.

Clinical features:

Besides urinary tract infections and wound infections, enterococci can also cause endocarditis, bacteremia, and meningitis.

Disease control methods:

Treating VRE infections is difficult because the number of antibiotics to which the organisms are sensitive is limited. No treatment is needed for those people who are colonized with VRE but have no symptoms. Thorough hand washing by hospital staff and appropriate cleaning of equipment will help to stop the spread of VRE.



VRE by County and Gender 1997-2002

	Male		Female			Total	
	Cases	Rates*	Cases	Rates*		Cases	Rates*
Belknap	13	-	2	-		15	-
Carroll	3	-	3	-		6	-
Cheshire	3	-	13	-		16	-
Coos	5	-	7	-		12	-
Grafton	26	14.8	15	-		41	9.7
Hillsborough	46	6.8	62	6.5		108	6.6
Merrimack	16	-	35	8.8		51	7.7
Rockingham	35	6.7	39	5.8		74	6.2
Strafford	3	-	9	-		12	-
Sullivan	5	-	6	-		11	-
Unknown	5	-	3	-		8	-
Total	160	6.23	194	5.65		354	5.88

** : Age adjusted standardized rates per 100,000 persons*

- : rates not calculated on counts <20

VRE by City

	1997	1998	1999	2000	2001	2002
Manchester	6	4	1	6	4	24
Nashua	4	2	1	3	9	4

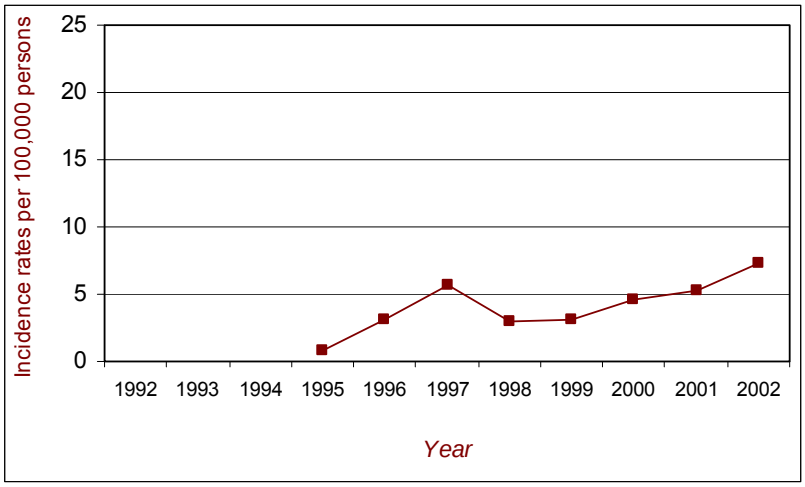
VRE

	New Hampshire		United States	
	Cases	Rates*	Cases	Rates*
1992	*nr*	*nr*	*nr*	*nr*
1993	*nr*	*nr*	*nr*	*nr*
1994	*nr*	*nr*	*nr*	*nr*
1995	10	0.9	*nr*	*nr*
1996	36	3.1	*nr*	*nr*
1997	67	5.7	*nr*	*nr*
1998	35	3.0	*nr*	*nr*
1999	37	3.1	*nr*	*nr*
2000	57	4.6	*nr*	*nr*
2001	66	5.2	*nr*	*nr*
2002	92	7.2	*nr*	*nr*

* :Crude rates per 100,000 persons

nr :Non reportable

VRE Incidence Rates
New Hampshire: 1992-2002



For additional information regarding this disease, please call the New Hampshire Department of Health and Human Services, Communicable Disease Surveillance Section at 1-800-852-3345 ext 0279.

NEW HAMPSHIRE'S EMERGENCY & BIOTERRORISM DETECTION EFFORTS

By Stephanie Miller & Kim Fallon
Communicable Disease Surveillance

Prior to 2001, the likelihood of a bioterrorism attack seemed remote. However, September 11 and the concurrent appearance of anthrax cases in several east coast cities have prompted many state agencies, health care facilities and even privately owned businesses to review, update or create bioterrorism response plans.

Bioterrorism is different from other kinds of terrorism. In chemical or explosives attacks, causalities are seen immediately. In a bioterrorism attack, the incubation period needed for a disease agent to produce an effect is longer, sometimes days or even weeks.

Smallpox virus, for instance, has an incubation period of 7 to 19 days with an average of 10 to 14 days from exposure to onset of illness.

Diagnosing a bioterrorism related disease is especially difficult due to the incubation period and the fact that physicians in this country do not frequently see many potential bioterrorism diseases.

Initial signs and symptoms of many diseases that could be used in a bioterrorism attack resemble common ailments and are difficult to diagnose without laboratory testing. If not recognized promptly, appropriate treatment of victims and prophylactic treatment of other exposed persons could be delayed.

Surveillance: A Key Component To A Public Health Response

State and local departments of public health have been particularly instrumental in shaping a state or community's response to a bioterrorism threat. The NH Department of Health and Human Services is one of many agencies that would act in this type of situation and in doing so has a special place in the planning process.

In New Hampshire, the Communicable Disease Control and Surveillance Sections are responsible for detecting, investigating and providing disease control and prevention measures following a bioterrorism incident.

During 2001 and 2002, Communicable Disease Surveillance Section (CDSS) has engaged numerous state agency and external partners in the development of several new bioterrorism/ emergency surveillance systems that are currently in operation (over-the-counter pharmaceutical surveillance, medical examiner surveillance), and some that are in the beginning stages of being implemented (school/occupational health surveillance).

To date, the usefulness of these bioterrorism/emergency surveillance systems has been demonstrated by various states throughout the nation that also have similar systems[1]. In New Hampshire, these systems have already been used on several occasions to help characterize and in some cases, re-direct the focus of outbreak investigations using the information that they provide.

Syndromic Surveillance Project

In response to the events of September 11, 2001 the Communicable Disease Surveillance Section (CDSS) contacted all acute care hospitals in the state and implemented an emergency department syndromic surveillance system. The emergency departments (ED) were asked to provide daily data for the total number of patients seen in the ED, total number of fevers equal to or greater than 100° F, and the total number of respiratory problems. This syndromic surveillance system was designed to detect the early phase of a disease outbreak that might have occurred as a result of mass exposure to disease organisms that could be related to bioterrorism. The Centers for Disease Control and Prevention (CDC) classified the following diseases as Category A bioterrorism diseases based on their ability to cause significant morbidity and mortality:

Anthrax
Small Pox
Plague
Botulism
Tularemia
Viral Hemorrhagic Fevers

Following the implementation of the first syndromic surveillance system, CDSS staff reviewed other state's emergency department syndromic surveillance projects, as well as the CDC's emergency department syndromic surveillance plans for major events, and proposed modifications to the original system.

On October 19, 2001, a revised long term ED surveillance system was implemented with 13 sentinel hospitals chosen for the number of patients seen in their emergency departments or by their geographical location in the state. Three other hospitals in the state also volunteered to participate. This sample covers 59% of the state's total emergency department visits. Under the revised system, two other categories were added – gastrointestinal illnesses and rashes. This data is maintained in a database within the CDSS and reviewed daily.

Most recently, to address the need to enhance the currently operating emergency department syndromic surveillance system the CDSS and the Bureau of Health Statistics and Data Management (BHSDM) have combined with the New Hampshire Hospital Association (NHHA) to develop a web-based Emergency Department (ED) data collection system. The scope of this project is to create an environment where hospitals can report ED data either through a secured Internet transmittal or through a manual, web-based interface directly from the ED. Additionally, a collaborative project that is in development with the state's Department of Safety, Enhanced 911 unit will allow for emergency department diversion status to be reported through the system and then linked with the state's current Health Alert Network (HAN) to provide ambulance dispatch units with "real time" notice of a hospital's diversion status.

Animal Surveillance Project

The CDSS has an ongoing surveillance system with the State of New Hampshire Veterinarian, Dr. Clifford McGinnis.

This project has been in place since May 2001 and consists of a review of all New Hampshire livestock deaths that have confirmed diagnoses found on the National Animal Reportable Disease list.

The diseases on this list are similar to those on the Nationally Notifiable Infectious Diseases list for humans, including some diseases that are considered likely bioterrorism agents.

Since May 2001, there have been no positive reports for any animal diseases associated with bioterrorism agents in New Hampshire.

Russia's Anthrax Incident

The importance of the State Veterinarian Bioterrorism Surveillance Project can be illustrated by the investigation into the 1979 anthrax outbreak in the Soviet Union. A military facility in Sverdlovsk that was secretly working with anthrax to use as a biological weapon had an accidental release. Within a few days, people downwind of the facility began to get sick and die.

Overall, 68 people were reported to have died. The military denied any involvement in the incident and stated that the outbreak was likely due to the gastrointestinal form of anthrax from meat that had been brought into the country illegally.

In 1992, then-President Boris Yeltsin allowed a team of American scientists to enter Russia to further investigate these deaths. The team interviewed victim's relatives, medical staff at the hospitals during the outbreak, and pathologists who performed autopsies on the victims.

They also reviewed medical charts, autopsy slides, and obtained weather information at the time of the release.

Based on the new evidence, the team was able to conclude that the deaths were caused by inhalational anthrax that was released from the facility and dispersed through the air in a plume downwind of the facility.

Anthrax tends to have a more rapid course in sheep and cattle than in humans. The lag time of incubation to onset of disease can be a day or two

longer in humans. It was discovered that a preponderance of livestock in Sverdlovsk were dying just before any human illness became apparent.

Although the importance of the animal deaths in Russia was not realized at the time, surveillance of livestock in determining an exposure to humans is now considered an ideal surveillance model.

Vital Records Mortality Surveillance

New Hampshire is one of the few states in the nation with Vital Records Vision 2000 (VRV2000), a computerized system where electronic death certificates are filed at the state within 24-hours of being signed. Unlike most other states, where death certificates may not be received by the state's vital records department for up to a month, VRV2000 allows for the review of death certificates on a daily basis.

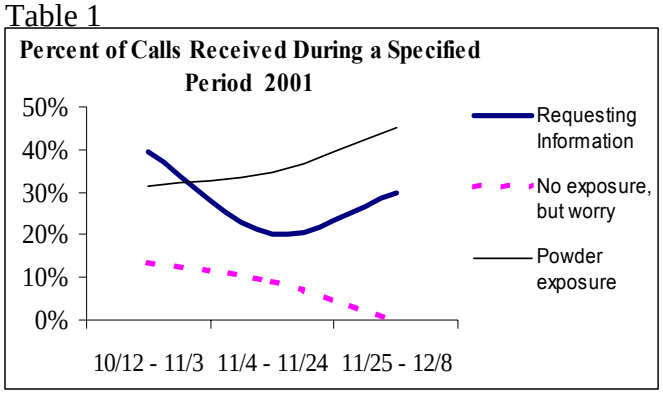
Currently, the CDSS has an ongoing project that consists of a daily review of all New Hampshire deaths for those agents listed on the bioterrorism Category A list as well as syndromes that may be suggestive of infection with a bioterrorism agent; such as pneumonia, fever, sepsis and Adult Respiratory Distress Syndrome.

Bioterrorism In New Hampshire

To date, the bioterrorism surveillance projects within the CDSS have given no indication that any bioterrorism activity is occurring in the state. However, these new and innovative bioterrorism/emergency surveillance systems have become an important resource within public health, in terms of providing a new component of information. At the same time these systems can serve a dual purpose of providing surveillance protection for possible bioterrorism events while helping to characterize naturally occurring outbreaks.

Since the recognition of anthrax in the United States in October 2001, the Disease Control and Surveillance Sections have received over 750 calls from concerned citizens, health care providers, law enforcement officials and private business owners. Most of the calls occurred in the weeks and months following the anthrax attacks.

Table 1

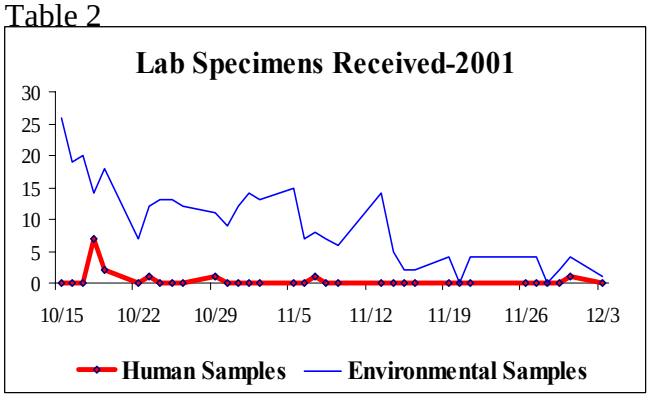


The majority of the calls have been to gather information on the State's plans and protocols, to receive bioterrorism fact sheets, and to ask general questions about risk and exposure to anthrax.

However, there has been a significant amount of concern about powder exposure and worry about being exposed to powder made up 45% of all calls received in 2001 (Table 1).

In fact, the State's Public Health Laboratory received over 300 environmental and 17 human specimens suspicious for anthrax in 2001 (Table 2). Not surprisingly, the number of submissions proportionally corresponded with the detection of anthrax cases in other US cities during the same time period. All of the New Hampshire submissions have been negative for anthrax.

Table 2



It must be emphasized that these projects are tools used to help quickly identify an outbreak or suspicious occurrence but that individual cases may not be identified by these methods.

For that reason, heightened awareness and surveillance cooperation by all New Hampshire

health care providers is absolutely essential to the success of this initiative.

As stated in the April 21, 2000 issue of the Center for Disease Control and Prevention's Mortality and Morbidity Weekly Report: "The public health infrastructure must be prepared to prevent illness and injury that would result from biological and chemical terrorism, especially a covert terrorist attack.

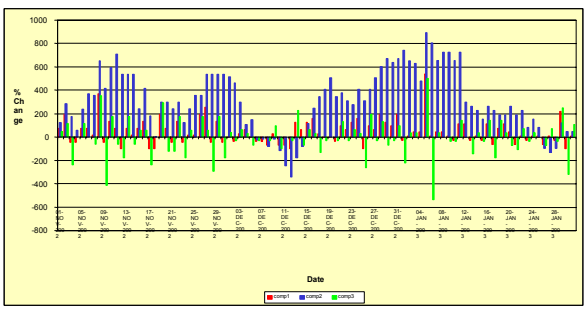
As with emerging infectious diseases, early detection and control of biological and chemical attacks depends on a strong and flexible public health system at the local, state and federal levels. In addition, primary health care providers throughout the United States must be vigilant because they will probably be the first to observe and report unusual illness or injuries."

Over the Counter Pharmaceutical Surveillance

In December 2002, Phase I of the Over the Counter Pharmaceutical Surveillance (OTC) pilot project was initiated and has become one of the key bioterrorism/naturally occurring outbreak detection projects within the CDSS. A commitment has been obtained from one of the largest New England supermarket chains (28 stores in NH) to work on this pilot project. The CDSS has obtained three and a half months of new data and a full calendar year of historical data from the supermarket chain and is in the process of performing a formal system evaluation. To date, this system has been utilized to monitor the state during the peak of the 2003 influenza season and was also invaluable in helping to characterize two statewide outbreaks by pinpointing the communities that were likely to be the first affected.

A NH GI Outbreak: OTC Daily Data Analysis

11-01-2002 To 3 -31-2003



NH Medical Examiner Surveillance (NH MEDEX)

The New Hampshire Medical Examiner Surveillance Project (NH MEDEX) began data collection on March 1, 2003. All of the state's medical examiner cases are reviewed against a set of standardized criteria that would indicate a death that is related to infectious disease or to unexplained illness. The state's forensic investigators are also provided with NH MEDEX criteria and public health consultation on an as needed basis by the CDSS. Since the beginning of March, several deaths that normally would have been declined have been accepted as medical examiner cases due to the NH MEDEX criteria. This surveillance system was particularly useful in helping to monitor the Severe Acute Respiratory Syndrome (SARS) epidemic in New Hampshire unexplained deaths. Specimens obtained with the help of the Medical Examiner's Office were subsequently sent to the Centers for Disease Control and Prevention for testing following symptoms that were suspect for SARS. This system when used in conjunction with the daily death certificate records review, that has been in place since the events of September 11, 2001, allows New Hampshire to function as one of the only states in the nation with the ability to monitor the state's deaths in near "real time".

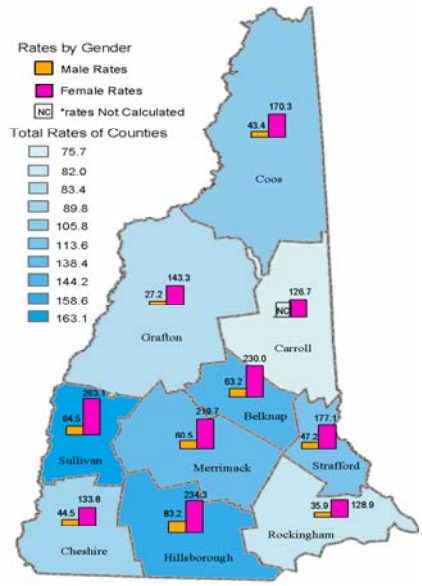
Other Surveillance Activities

Another area that the CDSS continues to develop is that of "drop in" surveillance protocols.

These protocols are pre-designed database systems or surveys that are used for specialized or temporary situations where surveillance information is needed during an "alert" period. This idea was used by several states that were directly affected by the anthrax incidents that occurred in 2001[2,3,4]. For example, conducting absenteeism surveillance for employees, laboratory surveillance of bioterrorism-specific microbes, and primary health care provider surveillance. This objective has become particularly useful in light of recent concerns in the United States regarding new and emerging diseases, such as SARS and the monkeypox virus, and the need for state public health departments to be vigilant about tracking the

spread of these illnesses. A surveillance system such as this would be used only for a short duration and each situation would dictate what type of surveillance data was needed. These "drop-in" systems would then be created by CDSS staff for rapid implementation to fit the specific needs of the outbreak. Most recently a prototype of this type of system was used for the New Hampshire smallpox vaccination campaign capturing all demographic data for smallpox vaccinees and related side effects (day 1 through 21+) following the smallpox vaccination.

In 2002, the CDSS initiated a Geographic Information Systems (GIS) component within the section. The overall vision for this component of the section is to build a GIS infrastructure to provide data, analysis methods, and application tools specifically for communicable disease surveillance and emergency preparedness and response activities in New Hampshire.



Use of GIS to visually display communicable disease data.

GIS has been used in public health, in the analysis of environmental data for years[5]. However, more recently the use of GIS technology has become an integral part of any comprehensive disaster management plan including the component that focuses on public health and disease control efforts. More specifically, it can be used to help confront disasters at all stages of emergency management: planning and preparedness, surveillance and analysis, mitigation, response, and finally, recovery[6, 7]. The CDSS plans to take a phased-in approach to the use of GIS by developing and implementing a GIS infrastructure for applications in emergency preparedness and response, and then using this infrastructure to expand its uses to cover other areas within the state and local departments of health.

1. Journal of Urban Health. June 1, 2003, Volume 80, Supplement 1. Bioterrorism: Syndromic Surveillance. http://jurban.oupjournals.org/content/vol80/suppl_1/index.shtml
2. Das, Debjani, Don Weiss et al. "Enhanced Drop-in Syndromic Surveillance in New York City Following September 11, 2001." J Urban Health 2003 80: i76-i88.
3. Williams AA, Parashar UD, et al. "Bioterrorism-related anthrax surveillance, Connecticut, September-December, 2001." Emerging Infectious Diseases Volume 8, Number 10, October 2002. Available from: URL: http://www.cdc.gov/ncidod/EID/vol8no10/02-0399.htm
4. Tan CG, Sandhu HS, et al. "Surveillance for anthrax cases associated with contaminated letters, New Jersey, Delaware, and Pennsylvania, 2001." Emerging Infectious Diseases Volume 8, Number 10, October 2002. Available from: URL: http://www.cdc.gov/ncidod/EID/vol8no10/02-0322.htm
5. ArcUser. July-September 2001, Volume 4, Number 3. Focus: GIS and Emergency Response. Pgs. 10-19.
6. ArcUser. January-March 2002, Volume 5, Number 1. Focus: GIS and Homeland Security. Pgs. 8-21.
7. ArcUser. July-September 2002, Volume 5, Number 3. Focus: Health Geography. Pgs. 12-20.

NEW HAMPSHIRE SURVEILLANCE FOR CREUTZFELDT-JAKOB DISEASE

By Alcia Williams MD, MPH
CDC Epidemic Intelligence Service Officer

Case Report

A 63 year-old woman was admitted to a community hospital in Connecticut with a four-week history of progressive confusion and agitation. The patient lived alone and reportedly had some decline in her memory for the past six months. Her ability to function had declined progressively during the last six to ten weeks before hospitalization. On admission the patient's neurological exam was significant for an awake but mute state. She did not respond to any verbal stimuli or follow any commands. Occasional muscle jerks in the upper extremities were noted. Evaluation with laboratory testing, cerebrospinal fluid, CT scan and MRI of the brain was unremarkable. She was transferred to a community hospital in New Hampshire eight days after her initial admission for further medical evaluation and treatment. She was clinically diagnosed as progressive dementia without clear etiology. The patient died 22 days after initial hospitalization. A limited brain-only autopsy was performed and her final pathologic diagnosis was: *Primary – Extensive spongiform degeneration consistent with Creutzfeldt-Jakob disease (CJD); Secondary – Changes consistent with senile dementia, Alzheimer's type.*

History and Background

CJD is not a new infectious disease, having been recognized for the better part of a century. Two German physicians, after whom the disease was named, first identified it in the 1920s.[1] CJD is one of a group of diseases called transmissible spongiform encephalopathies (TSEs), that also include kuru, Gerstmann-Straussler-Scheinker disease, fatal familial insomnia, scrapie of sheep, and mad cow disease of cattle and dairy cows. The first recognized transmissible spongiform encephalopathy (TSE), sheep scrapie, was reported by sheepherders in the mid-18th century. Mad cow disease, which was first recognized in 1986, appears to have originated from scrapie, a naturally occurring disease of sheep and goats. There is strong evidence and general agreement that mad cow disease resulted from the feeding of rendered scrapie-containing sheep meat-and-bone meal to cattle. It has since been recognized in most sheep-breeding countries and is widespread in the United Kingdom where until 1988 the rendered carcasses of livestock (including sheep) were fed to other animals as a protein-rich nutritional supplement. Mad cow disease has not occurred in the United States or other countries that have historically imported little or no live cattle, beef products or livestock nutritional supplements from the United Kingdom.[2] Humans have likely been exposed to scrapie by eating sheep meat, although there is no evidence that CJD in humans has been associated with scrapie.[3]

There are four types of CJD: classic sporadic, iatrogenic, familial and new variant. In general, all four types have long incubation periods, months to years, preceding the onset of clinical illness. The disease usually begins with progressive mental deterioration that soon becomes associated with progressive unsteadiness and clumsiness, visual deterioration, muscle twitching and a variety of other neurological and psychiatric signs and symptoms. The patient is usually mute and immobile in the terminal stages, and in most cases death occurs within a few months of onset of symptoms (Table 1).[4]

The diagnosis of CJD is a challenge. Most routine laboratory or diagnostic studies are of little value. Definitive diagnosis requires biopsy and examination of brain tissue pre or post mortem. No effective treatment is available and there are no known cases of remissions or recoveries.

TSE's are caused by the progressive accumulation in the central nervous system of a structurally abnormal form of a normal protein known as the prion protein. This "infectious agent" or prion protein, interacts and damages normal proteins within brain cells. Gaps in brain tissue

Table 1

Classic sporadic CJD
- Etiology– occurs spontaneously without identifiable cause
- Age onset- between the ages of 50 and 70.
- Early symptoms-minor lapses of memory, confusion, mood changes, loss of interest.
- Psychiatric symptoms- most commonly depression or less often a schizophrenia-like psychosis are not uncommon presentations.
- Neurological signs- unsteadiness, difficulty walking involuntary movements, clumsiness blurred vision slow or slurred speech develop as the illness progresses.
- Time course- median of 4.5 months after onset of neurological findings until death

Iatrogenic CJD
- Etiology-accidental transmission of classic sporadic CJD as a result of a medical procedure. Sources are contaminated instruments insufficiently autoclaved after use in a patient with CJD.
- Signs and symptoms- similar to those in classic sporadic CJD.

Familial CJD
- Etiology- occurs genetically in families
- Age onset-slightly younger age than either classic of iatrogenic CJD
- Time course- more protracted course than classic sporadic CJD.

New variant CJD
- Etiology- linked to mad cow disease by consumption of infected beef
- Age of onset- mean age at onset is 29 years vs. 60 years for classic CJD
- Early symptoms- anxiety and depression.
- Neurological symptoms- uniformly associated with incoordination and a type of sensory impairment of touch, not typical of classic CJD.
- Time course- average of 14 months from onset of neurological symptoms to death.

develop, giving the brain a characteristic "sponge-like appearance when viewed under a microscope.[5]

Media attention to the recent outbreaks of mad cow disease in the United Kingdom and the association with new variant Creutzfeldt-Jakob disease (nvCJD) has attracted worldwide attention. New variant Creutzfeldt-Jakob disease of humans is hypothesized to be caused by consumption of contaminated beef. This type of CJD represents the first recognized instance in which a TSE of animals has crossed a species barrier to infect humans. There have been no documented cases of nvCJD or mad cow disease in North America.

Epidemiology

CJD occurs worldwide at an estimated annual incidence rate of 0.5 to 1.5 cases per million population with no seasonal or geographic predisposition except for areas of high familial occurrence. To date there is no evidence of person-to-person transmission among family members. Although not a reportable disease in most states, the possibility that mad cow disease can be spread to humans has focused increased attention on national CJD surveillance. The Centers of Disease Control and Prevention (CDC) monitors trends and the incidence of CJD in the United States by analyzing death certificate information compiled by the National Center for Health Statistics. These data indicate that there is

no discernible increase in the incidence of CJD detected in the United States during the past two decades. The annual CJD death rates in the United States from 1979-1995 have been stable ranging between 0.8 cases per million in 1980 and 1.1 cases per million in 1987.[6]

New Hampshire is one of several states that do not require reporting of patients with CJD. However, New Hampshire does participate with CDC in monitoring death certificates on all cases of CJD. Based on a national rate of 1 case per million persons per year, approximately 1 to 2 cases of CJD are expected in New Hampshire each year. Listed below is a summary of death certificate data from the New Hampshire Vital Records Database.

The true prevalence of CJD in the United States is unknown. Case recognition and the challenge of diagnosis are contributing factors. In addition, surgical and autopsy procedures to determine etiology of symptoms are rarely performed on patients with atypical dementias or in patients in whom the diagnosis may have been considered because of the fear of transmission of "infection". Performing limited autopsies on the brain only or brain biopsies of suspect cases is the only way to monitor the true prevalence of CJD and the emergence of nvCJD in the United States. Diagnostic testing specific to the identification of CJD is performed at designated laboratories in the United States. The Communicable Disease Control Section will assist in sending any brain specimens to the appropriate laboratory for the purpose of identifying CJD.

Stringent recommendations from the World Health Organization for decontaminating instruments or equipment that have come in contact with tissues of patients with CJD, during surgical or autopsy procedures, are now used uniformly throughout the United Kingdom and other countries. These recommendations, based on studies that prove the effectiveness of decontamination procedures of the prion protein, are available in full text on the Internet at http://www.who.int/csr/resources/publications/bse/en/

For more information on CJD in New Hampshire and transportation of brain specimens for diagnostic testing, please contact the New Hampshire Communicable Disease Control Section at (603) 271-4496 or 1-800-852-3345 extension 4496.

Table 2: Numbers of deaths attributed to Creutzfeldt-Jakob disease. New Hampshire, 1993-1999.

	CJD
1993	0
1994	0
1995	2
1996	3
1997	5
1998	3
1999	4
Total	**17**

References:

1. Brown P, Bradley R. 1755 and all that: A historical primer of transmissible spongiform encephalopathy. *BMJ* 1998; 317:1688-92.
2. Brown P, et al. Bovine spongiform encephalopathy and variant Creutzfeldt-Jakob disease: Background, evolution, and current concerns. *Emerging Infectious Diseases* 2001; 7(1).
3. Orriss GD. Animal diseases of public health importance. *Emerging Infectious Diseases* 1997; 3(4): 497-502.
4. Whitley RJ, et al. Technical report: Transmissible spongiform encephalopathies: A review for pediatricians. (T109906*). Pediatrics* 2000; 106(5): 1160-1165.
5. Pruisner SB. Prion diseases in humans and animals. *Virology* 1996; 7: 159-73.
6. Bovine spongiform encephalopathy (BSE) in the United Kingdom and Creutzfeldt-Jakob disease (CJD) in the United States. CDC Website. Available at http://www.cdc.gov/ncidod/diseases/cjd/cjd.htm

HEPATITIS C

By Chantal Kayitesi
Hepatitis C Coordinator

Epidemiology

According to the World Health Organization, an estimated 170 million persons worldwide are chronically infected with hepatitis C virus (HCV), a virus that affects the liver. A 1988-1994 National Health and Nutrition Examination Survey (NHANES) found that 1.8% of the United States (US) population was positive for HCV antibodies and an estimated 2.7 million people in the US had an active HCV infection.

The Centers for Disease Control (CDC) estimated the number of new infections per year at about 25,000 in 2001. That incidence has declined from an average of 240,000 cases in the 80's. HCV is the leading cause of liver transplant in the US and a common cause of cirrhosis and liver cancer (hepatocellular carcinoma).

HCV is an enveloped RNA virus classified in the Flaviviruses family and was first identified in 1989. There are 6 distinct but related genotypes and greater than 50 subtypes that have been identified. Genotype 1a and 1b are common in the US followed by genotype 2 and 3. Knowledge of the genotype is important due to the predictive value in terms of response to antiviral therapy.

Clinical Features

HCV infection is a silent infection and about 80% of infected people have no symptoms. When they occur, symptoms consist of jaundice, malaise, nausea, fatigue, dark urine, abdominal pain, and lost of appetite. The disease is infrequently diagnosed during the acute phase of infection.

The incubation period is 7 to 8 weeks after exposure (ranging from 2 to 26). After acute infection, about 15% to 25% of infected individuals resolve the infection from their blood spontaneously while 75% to 85% develop chronic infection characterized by prolonged viremia and a long period in which there are no symptoms. Of these chronically infected persons, 70% will develop chronic liver disease in the form of cirrhosis or cancer of the liver.

Risk Factors and Modes of Transmission

In the US, HCV is mostly transmitted through direct contact with infected blood. High-risk individuals include:

- Injection drug users who share syringes (60% of new infections)
- People who received a blood transfusion before 1992
- People who received an organ transplant before 1987
- Patients who have been on long-term kidney dialysis
- Hemophiliac patients
- Children born to infected mothers
- Individuals having unprotected sex with multiple sexual partners

CDC recommendations for HCV prevention and control

In the absence of a vaccine CDC recommends:

- Public education on HCV infection
- Health Education for providers and public health professionals on disease prevention and control
- Screening, testing and counseling of high-risk individuals
- Risk-reduction counseling and case management
- Screening and testing of blood, plasma, organs, tissues and semen donations
- Early diagnosis and treatment to reduce the risk of chronic liver disease

State Hepatitis C program

The New Hampshire Department of Health and Human Services, Communicable Disease Control established its first hepatitis C program in September 2002. The ultimate goal of this program is to plan, develop, coordinate and evaluate public health education, health promotion and disease prevention programs for HCV in New Hampshire.

The main strategy is to promote the integration of HCV education into existing programs that target the same high-risk population (HIV/STDs, Immunization, and Substance Abuse Prevention and Treatment). Since its creation, the program has focused on developing a comprehensive plan for HCV prevention and control.

The program will target high-risk populations such as injection drug users, incarcerated populations, and other high-risk individuals. Interventions will be aimed at raising public awareness of HCV infection in the community and enhancing knowledge and competency in the management of the infection.

The Communicable Disease Control staff has been providing education, ongoing information and consultations on hepatitis C to the public and health care providers around the state. The new hepatitis C program has established good working relationship with other programs targeting the same high-risk population. The program will continue to create and strengthen an active partnership with all stakeholders in order to establish the foundation for an integrated approach for the management of HCV in New Hampshire.

References:

Chin J. MD, MPH, and Editor: Control of Communicable Disease Manual. Report of the APHA, 2000
CDC: IDU/HIV Prevention: Medical Management of Chronic Hepatitis, September 2002
George M. Lauer et al.: Hepatitis C virus Infection. N. Engl. J. Med, volume 345, No 1 July 5, 2001
NIH: Consensus Development Conference Statement: Management of Hepatitis C, September 2002

INFLUENZA

By Susan Bascom RN BSN
Vaccine Preventable Disease Surveillance Coordinator

Influenza, also known as the flu, is an acute respiratory disease caused by the influenza virus. There are three influenza virus strains, A, B and C. Both influenza type A and type B viruses are responsible for widespread illness in humans, while type C is rarely reported in humans. Influenza A viruses are classified into subtypes based on the surface antigens, or proteins, known as hemagglutinin (H) and neuraminidase (N). Influenza B viruses are not divided into subtypes. The H and N antigens undergo continuous changes. An antigenic shift is a major change in one or both antigens forming a new virus subtype and may result in an influenza pandemic, a worldwide spread of disease occurring at varying intervals. An antigenic drift is a minor change in the antigens and causes yearly influenza epidemics that are less severe than pandemics. Because of the constant change in the antigens, antibodies that developed from previous exposure to the influenza virus may not be protective against the current circulating virus. As a result, influenza vaccine must be annually reviewed and updated to ensure that it contains the correct components.

The flu is characterized by an abrupt onset of fever, headache, non-productive cough, general malaise, and muscle aches. Subsequently, the respiratory symptoms (e.g. sore throat, nasal congestion and cough) become more prominent. The virus is spread from person to person primarily through coughing and sneezing.

The incubation period for flu is usually about 2 days, but can range from 1 to 5 days. Systemic symptoms and fever typically last 2-3 days, but cough and malaise can persist for 2 weeks or more. The period of communicability usually begins 1 day before symptoms appear through 5 days after onset of symptoms.

Any underlying chronic health conditions may be exacerbated during a bout of influenza and/or a secondary bacterial pneumonia may develop. While the flu affects all age groups, rates of infection are highest among children. However, rates of serious illness and death are highest among those 65 years of age or greater, immunocompromised persons, or persons with any underlying medical conditions, such as pulmonary or cardiac conditions. In the United States, influenza causes about 20,000 deaths and 110,000 hospitalizations per year.

Influenza vaccination is the best protection against the flu. In addition to the yearly flu shot, a person can help prevent the spread of influenza by covering his or her mouth when coughing or sneezing, washing hands frequently with soap and water, and limiting contact with others while sick.

In New Hampshire, influenza is not a reportable disease by law, but we do monitor influenza and influenza outbreaks, and provide recommendations to health care providers. Surveillance occurs in our state a number of ways including weekly assessments of influenza activity; informal reports from health care providers, schools and residential facilities; reports from the Public Health Laboratories of laboratory results on specimens submitted; and through the U.S. Influenza Sentinel Provider Surveillance System. This network is managed by the Centers for Disease Control and Prevention, but coordinated by each state. Each week, sentinel healthcare providers report the total number of patients seen in their practice for that week, and the number of cases of influenza-like illness (ILI) by age group. For this purpose, ILI is defined as: 1) a fever ≥ 100° F and 2) cough and/or sore throat.

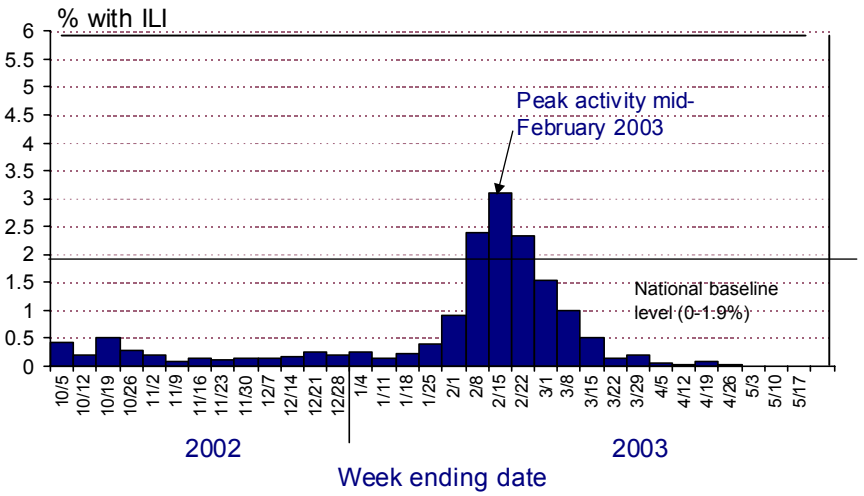
2002-03 Influenza Season (9/29/02 through 5/17/03)

For the 2002-03 influenza season, we were fortunate to have 22 sentinel sites participating in New Hampshire (NH). All counties were represented with at least one sentinel site, giving us a good picture of influenza activity in the state. Figure 1 shows ILI as reported by NH sentinel healthcare providers in 2002-

03. Peak influenza activity, which varies from season to season, occurred in mid-February 2003. In the previous four seasons, peak flu activity occurred in mid-February to early March 1999; the end of December 1999 to mid-January 2000; mid-January to the end of February 2001, and mid-February 2002.

During January and February 2003, more than 75 schools in the state reported increased absenteeism due to ILI. Reported absenteeism seemed to peak in mid-February, coinciding with the peak of ILI activity reported by the sentinel sites. Influenza type B/Hong Kong was laboratory confirmed in one high school.

Figure 1: Percentage of Visits for Influenza-like Illness (ILI) Reported by NH Sentinel Physicians
Influenza Season 2002-2003



In Table 1, influenza culture specimens submitted to the Public Health Laboratories are listed by virus type. These are specimens from all healthcare providers who submitted specimens, including those participating in the Influenza Sentinel Provider Surveillance System. Influenza A (H1N1) and influenza B/Hong Kong were the virus types identified this season, and both were included in the 2002-03 flu vaccine.

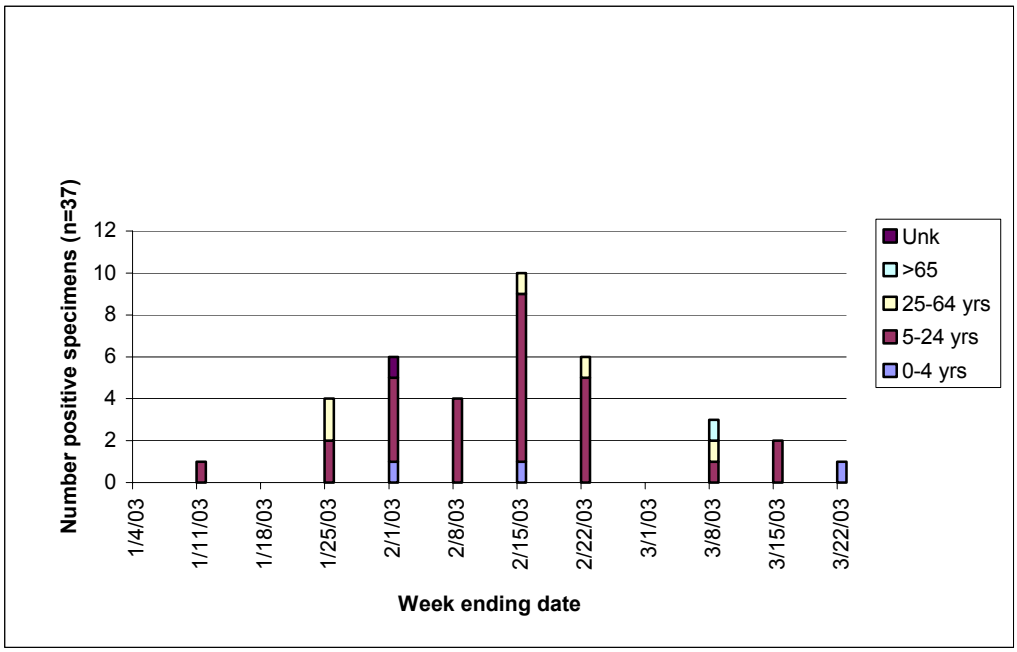
Table 1: Influenza Culture Specimens Sent to NH Public Health Laboratories by All Healthcare Providers
Influenza Season 2002- 03

	# of specimens	% of specimens positive for influenza (n=37)
Influenza A (H1N1)	18	48.7%
Influenza A, (sent to CDC for subtyping)	1	2.6%
Influenza B/Hong Kong	18	48.7%
Negative for influenza*	105	
Total	152	

*Includes specimens positive for adenovirus (4), CMV (1), RSV (1), parainfluenza (3), herpes simplex type 1(1)

Figure 2 shows the age group of persons with laboratory confirmed influenza, and the week the Public Health Laboratories received those specimens. Persons primarily affected by influenza during this flu season were 5 to 24 years of age.

Figure 2: Positive Influenza Culture Specimens Sent to NH Public Health Laboratories, by Age Group
Influenza Season 2002-2003 (9/29/02 – 5/17/03)



Objective: Increase the percentage of independently living adults, age 50 or over, who report having been vaccinated against influenza in the last 12 months.

New Hampshire Baseline (1997)	46%
NH Target 2010	80%
NH 2002	
Ages 50-64	38.4%
Ages 65+	72.3%

www.healthynh2010.org

References:

American Academy of Pediatrics. Section 3, Summaries of Infectious Diseases, Influenza. In: Pickering LK, ed. *2000 Red Book: Report of the Committee on Infectious Diseases*. 25th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2000: 351-359.

Centers for Disease Control and Prevention. Prevention and Control of Influenza. Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2000; 49(RR03): 1-38.

Centers for Disease Control and Prevention. Manual for the Surveillance of Vaccine-Preventable Diseases. Atlanta, GA: 1999.

New Hampshire Department of Health and Human Services, Healthy New Hampshire 2010; March 2001: 17

Centers for Disease Control and Prevention, Public Health and Aging: Influenza Vaccination Coverage Among Adults Aged >50 Years and Pneumococcal Vaccination Coverage Among Adults Aged >65 Years---United States 2002, *MMWR Weekly*, October 17, 2003; 41:987-992.

VARICELLA (CHICKENPOX)

By Susan Bascom RN BSN
Vaccine Preventable Disease Surveillance Coordinator

Epidemiology

Primary infection with varicella zoster virus (VZV) causes an acute contagious disease called varicella or chickenpox. VZV can stay in the body's nerve cells without symptoms, and appear later as herpes zoster or shingles. Herpes zoster has been recognized since ancient times, while chickenpox was not reliably distinguished from smallpox until the late 1800's. Varicella and herpes zoster infections occur worldwide. In the United States, varicella infection peaks in winter and early spring.

VZV is most commonly spread from person to person through the respiratory tract, but may also occur through direct contact with skin lesions.

Complications are infrequent among healthy children and the risk for complications varies with age. At risk groups include healthy adults, immunocompromised persons and infants < 1 year of age. The most common complications of acute varicella include secondary bacterial infections, dehydration, pneumonia and central nervous system involvement.

Clinical Features

In children, rash appearance is generally the first sign of varicella, while adults may have 1-2 days of fever and malaise prior to rash onset. The rash is generalized, pruritic, and progresses rapidly from macules to papules to vesicular lesions before crusting. There may be lesions in several stages of development, as successive crops appear over several days. Lesions first appear on the scalp, progress to the trunk and then appear on the extremities. The incubation period is typically 14 to 16 days but can range from 10 to 21 days after contact with an infected person. Communicability occurs from 1-2 days before rash onset to 5 days following rash appearance. Chickenpox is generally a mild disease in otherwise healthy children, but adults may have more severe disease and more complications.

Disease Control Methods

Varicella vaccine, first licensed in the United States in 1995, is recommended for all children at 12-18 months of age, and for susceptible adolescents and adults. The NH Immunization Program provides varicella vaccine, along with other vaccines for children, to the state's healthcare providers who care for pediatric patients. The Advisory Committee on Immunization Practices (ACIP) recommends that children attending day care and schools be vaccinated. As of January 1, 2003, children attending day care in New Hampshire (NH) are required to show documentation of varicella vaccination or history of disease. Beginning with the 2003-04 school year, that same documentation will be required for children entering kindergarten (or 1st grade if kindergarten is not provided), and those entering 6th grade.

Treatment options include anti-viral medication for selected high-risk patients, but it is not recommended for otherwise healthy children. Exclusion from school or daycare also helps control varicella outbreaks. Children should be excluded after rash first erupts until the vesicles become dry. Public health nurses in the Department of Health and Human Services' Communicable Disease Control Section are available for consultation.

2002 Highlights

Varicella has not been a reportable disease in NH since 1995. For the years prior to 1995, individual case counts are not available, as aggregate data only was reported. From 1990 through 1994, reported cases of varicella ranged from 1,635 to 3,593 per year. Despite an increasing number of children receiving varicella vaccine since its licensure in the U.S. in 1995, a 2001 varicella outbreak in a NH daycare prompted an investigation by staff from the NH Communicable Disease Control Section, along with epidemiologists from the Centers of Disease Control and Prevention. Results of this investigation were published in the December 12, 2002 issue of the New England Journal of Medicine, Vol. 347:1909-1915. Any reported varicella outbreaks continue to be investigated.

References:

Centers for Disease Control and Prevention. Epidemiology and prevention of vaccine preventable diseases. 7th edition 2002. 139-155.

American Academy of Pediatrics. Varicella-Zoster Infections. In: Pickering LK, ed. *2000 Red Book: Report of the Committee on Infectious Diseases*. 25th ed. Elk Grove Village, IL; American Academy of Pediatrics; 2000: 624-38.

WEST NILE VIRUS
NEW HAMPSHIRE SUMMARY 2002

By Thomas L. Marsh RN,C
West Nile Virus Surveillance Coordinator

Since 1999, the New Hampshire Department of Health and Human Services has conducted surveillance activities for arboviruses, including West Nile Virus (WNV). On August 30, 2000, the NH Department of Health and Human Services (NH DHHS) identified West Nile virus for the first time when a citizen from Manchester submitted an infected dead crow. By the end of the 2000 season, 7 positive birds were discovered in our state.

During the 2001 season, a clear increase and evidence of local transmission was established. The NH DHHS reported 83 positive birds from southeastern New Hampshire, three mosquito pools, from Salem (2) and Dover (1), and two horses from the towns of Newton and Kingston. The WNV national surveillance system reported 66 human cases, including 5 fatalities, which were spread over the eastern United States. Most human cases reported during this two-year period were in highly populated urban areas.

Nationally, there has been a dramatic increase in WNV activity in 2002. All but 4 states in the continental United States have reported evidence of the virus based upon their surveillance activities.

As the 2002 season came to a close, more was learned about the transmission of the virus. Confirmation of the virus being transmitted through organ transplants, blood transfusion, from mother to unborn child, an occupational exposure (percutaneous, scalpel contaminated with infected tissue), and in breast milk was established.

It is important to emphasize that serious illness resulting from WNV affects a small percentage of the population. Statistically, less than one percent of the persons who become infected, develop serious illnesses that may result in death.

National Surveillance

Nationally, a total of 16,739 birds and 14,539 horses were reported as positive during the 2002 season. Additionally, 6604 mosquito pools tested positive. WNV has been isolated from 26 species of animals, excluding humans, birds, mosquitoes and horses. WNV infection was diagnosed in 4156 humans, 284 of these people died as a result of the illness. During the 2002 season, WNV was responsible for the largest meningoencephalitis outbreak ever documented in the United States. Meningoencephalitis was apparent in 2,946 of the 4,156 diagnosed cases. The epidemic profile for the 2002 season shows a median age of 55 years (range: 0 - 99 years), 2208 (55%) are male. The months of August and September are when the greatest number of cases are discovered. For the fatalities with data available, (n=284) median age is 77 years, 182 (64%) are male, with an age range of 19 - 99 years.

Statewide Surveillance Activity

WNV Information Line: As was the case last season, a toll free information line was staffed Monday through Friday during regular business hours.

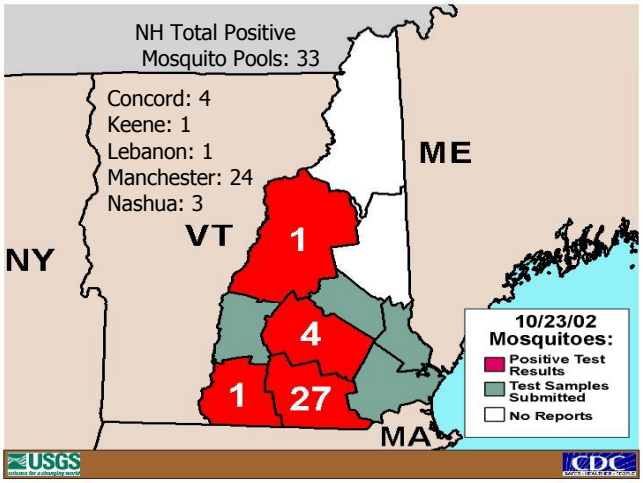
Human Surveillance: Health care providers in New Hampshire submitted 84 specimens from persons who were diagnosed with encephalitis and/or aseptic meningitis. Specimens were tested at the Public Health Laboratories. All results were reported as negative.

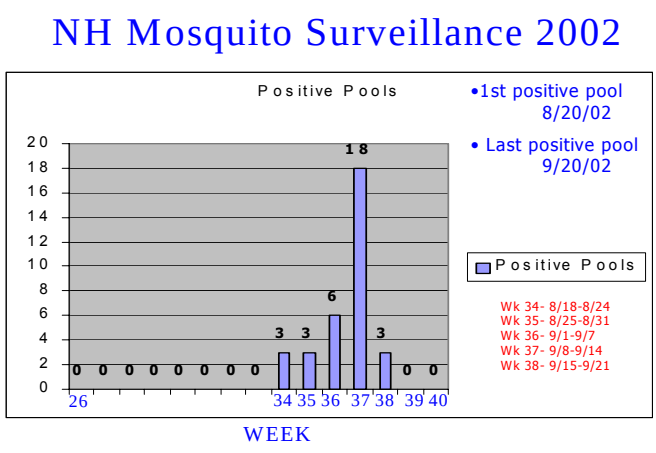
Equine Surveillance: The veterinary network for animal surveillance provided 4 horse specimens with neurological illness. None of these horses tested positive for WNV.

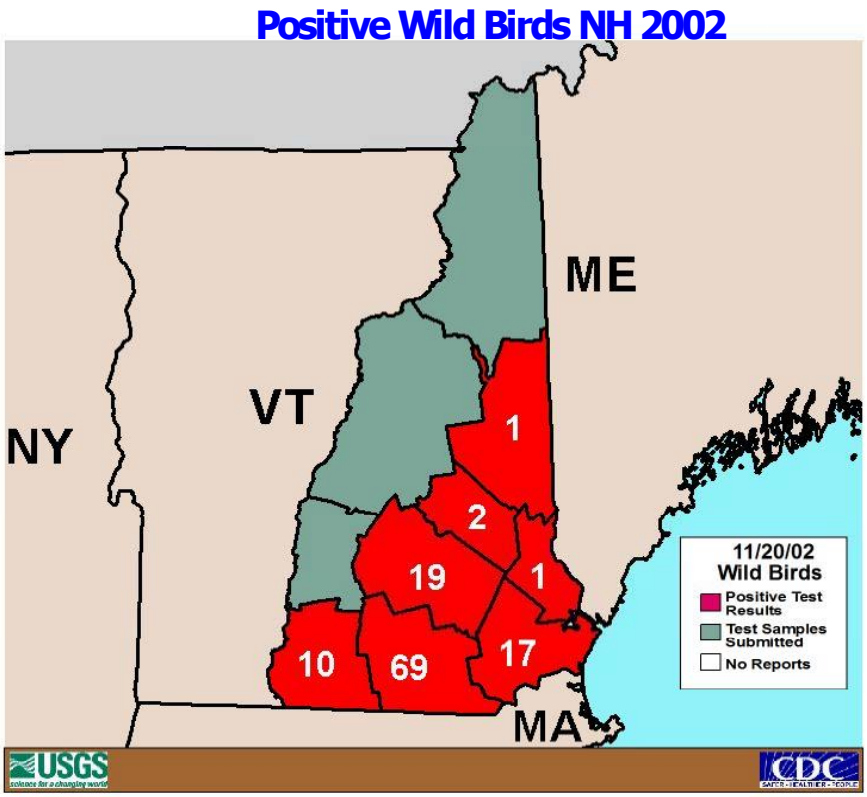
Avian Surveillance: The first positive bird was received 7/30/02; the last positive was received 10/17/02. 119 of these 451 birds (26%) were positive. Corvids (i.e. crows) (85) and blue jays (32), accounted for all but 2 of the birds testing positive, with most being recovered primarily from the Merrimack River corridor. Positive birds were submitted from Cheshire, Hillsborough, Rockingham, Belknap, Merrimack and Carroll counties.

Mosquito Surveillance: There were a total of 2433 mosquito pools collected. 33 (1.3%) of these pools were positive for WNV, a significant increase over the 2001 season when 3 mosquito pools tested positive. The first positive pool was collected 8/20/02. The last positive was collected 9/20/02. The following mosquitoes tested positive in NH during the 2002 season:

Genus	Species
• Culex	pipiens/restuans
• Culex	pipiens
• Culex	restuans
• Ochlerotatus	japonicus
• Coquillettidia	perturbans
• Ochlerotatus	triseriatus
• Anopheles	punctipennis
• Anopheles	walkeri







Outlook for 2003:

Geographic spread of WNV in the Unites States over the 2002 season encompassed all but 4 states. The CDC now considers WNV endemic in this country, with evidence of spread now into Canada and Mexico and points beyond. It is likely that all states within the continental US will report evidence of WNV by the end of the 2003 season. Continued reappearance of WNV in previously recorded locations confirms over-wintering of the virus in mosquitoes. Potentially these areas will be more likely to have transmission in future years.

The goals for New Hampshire's WNV Surveillance and Control Program for 2003 are:

- To increase awareness among New Hampshire citizens and officials about WNV and steps that may be taken by towns and cities to respond appropriately.
- To improve surveillance for WNV in birds, mosquitoes, horses and humans in order to provide advance notice to communities of WNV disease.
- To continue to foster collaborative partnerships with other local, state and federal agencies to improve research and response.

Health care providers interested in finding more information about West Nile Virus may call 1-800-852-3345 x 3910, or 603-271-3910. The DHHS website is http://www.dhhs.state.nh.us

References:

US Geological Survey. West Nile Virus available at http://cindi.usgs.gov/hazard/event/west_nile/ cited June 2003

Centers for Disease Control, Division of Vector-Borne Infectious Diseases, West Nile Virus available at http://www.cdc.gov/ncidod/dvbid/westnile/surv&controlCaseCount2002.htm cited June 2003

TECHNICAL NOTES

1. The data in this report are based upon information provided to the New Hampshire Department of Health and Human Services under specific legislative authority. The numbers reported may represent an underestimate of the true absolute number and incidence rate of cases in the state.

2. All communicable disease surveillance data may reflect health care provider or laboratory underreporting. County/city is based upon residence at time of disease diagnosis and includes no additional information regarding exposure location.

3. All population calculations and rates are based on the most recent published estimates by the U.S. Bureau of the Census and the New Hampshire Department of State Planning.

4. HIV surveillance data is limited due to changes in methods of data collection over time. Specifically, HIV infection case reports may or may not include a name; therefore there may be duplicate or incomplete reports.

5. The collection of *Pneumocystis carinii* pneumonia surveillance data is conducted under HIV/AIDS surveillance guidelines for the purpose of identifying advanced HIV infection cases (AIDS).

6. Published *MMWR* totals might not exactly agree with data presented in this report due to differences in timing of reports, data sources or surveillance methodologies.

7. Definition of Common Epidemiology Terms:

Case: A countable incident in the population of a particular disease, health disorder, or condition under investigation.

Case Definition: A set of standard criteria for deciding whether a person has a particular disease or health-related condition, by specifying clinical criteria and limitations on time, place, and person.

Cluster: An aggregation of cases of a disease or other health-related condition which are closely grouped in time and place. The number of cases may or may not exceed the expected number; frequently the expected number is not known.

Contact: Exposure to a source of infection, or a person exposed.

Rate: An expression of frequency with which an event occurs within a defined population.

Incubation period: A period of sub clinical or without observable changes following exposure, ending with the onset of symptoms of infectious disease.

Disease Surveillance: The systematic collection, analysis, interpretation, and dissemination of health data on an ongoing basis, to gain knowledge of the pattern of disease occurrence and potential in a community, in order to control and prevent disease in the community.

*Disease**	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*
Acquired Immune Deficiency Syndrome (AIDS)	46	124	92	112	93	55	42	46	31	34	39
Anthrax	0	0	0	0	0	0	0	0	0	0	0
Botulism	0	0	0	0	1	0	0	1	0	0	0
Brucellosis	0	0	0	0	0	0	0	0	1	0	0
Campylobacteriosis	+	311	377	253	275	210	177	173	157	154	175
Chlamydial Infection	+	+	+	898	732	816	960	976	1130	1383	1557
Cholera	0	0	0	0	0	0	0	0	0	1	0
Coccidioidomycosis	*nr*	*nr*	*nr*	0	0	0	0	0	2	3	0
Cryptosporidiosis	*nr*	*nr*	*nr*	11	50	6	18	20	25	17	31
Cyclospora Infection	*nr*	*nr*	*nr*	*nr*	*nr*	0	0	0	0	0	1
Diphtheria	0	0	0	0	0	0	0	0	0	0	0
Ehrlichiosis	*nr*	*nr*	*nr*	*nr*	0	0	0	1	1	0	4
Encephalitis, Arboviral only	+	+	+	+	+	0	0	0	0	0	0
Escherichia coli 0157:H7 Infection	*nr*	*nr*	*nr*	21	39	15	48	36	40	36	35
Giardiasis¶	29	404	457	340	347	327	83	64	56	39	46
Gonorrhea	145	83	103	118	153	96	91	115	110	176	120
Haemophilus influenzae , invasive disease	9	6	4	13	13	13	10	19	14	7	14
Hantavirus Pulmonary Syndrome	*nr*	*nr*	*nr*	0	0	0	0	0	0	0	0
Hemolytic Uremic Syndrome	*nr*	*nr*	*nr*	*nr*	0	0	0	0	3	0	2
Hepatitis, Viral: A	32	18	17	13	22	35	19	18	19	18	12
Hepatitis, Viral: B	50	27	28	23	21	18	21	17	19	16	25
Invasive Group A Streptococcus Disease	*nr*	*nr*	*nr*	22	7	5	8	17	16	20	37
Invasive Group B Streptococcus Disease	*nr*	*nr*	*nr*	*nr*	0	0	0	0	8	12	19
Legionellosis	7	2	0	2	4	7	7	10	4	12	7
Leprosy, Hansen's Disease	0	0	0	0	0	0	0	0	0	0	0
Listeriosis	0	1	2	1	2	4	3	5	4	4	4
Lyme Disease	44	15	30	28	47	39	45	27	84	129	261
Malaria	3	4	3	2	4	10	6	2	1	2	8
Measles	13	2	1	0	0	1	0	1	3	0	0
Mucopurulent Cervicitis (MPC)	99	186	156	117	48	94	83	60	54	100	112
Mumps	8	3	4	1	1	1	0	2	0	0	5
Neisseria meningitidis , invasive disease	10	6	8	29	13	17	13	13	12	14	14
Non-Gonococcal Urethritis (NGU)	41	53	124	104	81	142	98	93	80	138	129
Pelvic Inflammatory Disease (PID)	86	147	137	110	93	85	76	62	39	68	67
Pertussis	192	168	107	70	197	150	149	116	159	31	78
Plague	*nr*	*nr*	*nr*	0	0	0	0	0	0	0	0
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0
Psittacosis	0	0	1	0	0	0	1	0	0	0	0
Rabies in Humans§ or Animals	10	148	221	152	55	49	83	47	23	21	47
Rocky Mountain Spotted Fever	0	0	0	0	0	0	0	0	0	0	0
Rubella, including congenital rubella syndrome	0	0	0	1	0	0	0	0	2	0	0
Salmonellosis	339	220	213	188	133	151	187	141	148	166	142
Shigellosis	20	17	20	71	20	54	18	19	7	7	15
Syphilis, including congenital syphilis syndrome	63	50	18	32	29	23	14	17	19	20	27
Tetanus	0	0	1	0	0	0	0	0	0	0	0
Toxic Shock Syndrome (Streptococcal or Staphylococcal)	6	3	0	0	3	3	0	2	0	1	0
Trichinosis	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis Disease	18	26	17	23	21	17	14	19	22	20	19
Typhoid Fever	1	2	0	1	2	0	1	0	0	2	0
Typhus Fever	*nr*	*nr*	*nr*	*nr*	0	0	0	0	0	0	0
Vancomycin Resistant Enterococci (VRE)	*nr*	*nr*	*nr*	10	36	67	35	37	57	66	92
Yersiniosis	*nr*	*nr*	*nr*	*nr*	15	12	3	5	7	5	4

* See techincal notes regarding MMWR reported totals.

\+ Data is limited or unavailable; see technical notes

¶ Since 8/97, only cases of giradiasis in persons <=5 years are counted

nr Not reportable

§ One human case of rabies reported in 1996

REFERENCES

American Academy of Pediatrics. *Group A Streptococcal Infections*. In: Pickering LK, ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL; American Academy of Pediatrics; 2000: 526-536.

American Academy of Pediatrics. *Pertussis*. In: Pickering LK, ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL; American Academy of Pediatrics; 2000: 435-448.

American Academy of Pediatrics. *Section 3, Summaries of Infectious Diseases, Influenza*. In: Pickering LK, ed. 2000 Red Book:

Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2000: 351-359.

American Academy of Pediatrics. *Varicella-Zoster Infections*. In: Pickering LK, ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL; American Academy of Pediatrics; 2000: 624-38.

American Medical Association, Centers for Disease Control and Prevention, Center for Food Safety and Applied Nutrition, Food and Drug Administration, Food Safety and Inspection Service, US Department of Agriculture, Diagnosis and Management of Foodborne Illnesses, A Primer for Physicians, The Institute, January 2001 (*E. coli 0157:H7)*

ArcUser July-September 2001, Volume 4, Number 3. Focus: GIS and Emergency Response. Pgs. 10-19.

ArcUser. January-March 2002, Volume 5, Number 1. Focus: GIS and Homeland Security. Pgs. 8-21.

ArcUser. July-September 2002, Volume 5, Number 3. Focus: Health Geography. Pgs. 12-20

Bovine spongiform encephalopathy (BSE) in the United Kingdom and Creutzfeldt-Jakob disease (CJD) in the United States. CDC Website. Available at http://www.cdc.gov/ncidod/diseases/cjd/cjd.htm , cited 2001

Brown P, Bradley R. 1755 and all that: A historical primer of transmissible spongiform encephalopathy. *BMJ* 1998; 317:1688-92.

Brown P, et al. Bovine spongiform encephalopathy and variant Creutzfeldt-Jakob disease: Background, evolution, and current concerns. *Emerging Infectious Diseases* 2001; 7(1).

Centers for Disease Control and Prevention, Core Curriculum on TB: What the Clinician Should Know, 4th edition, 2000

Centers for Disease Control and Prevention, Division of Bacterial and Mycotic Disease, *E.coli O157:H7*, available from http://www.cdc.gov/ncidod/dbmd/diseaseinfo/escherichiacoli_g.htm , cited 2002, June 21

Centers for Disease Control and Prevention, Division of Bacterial and Mycotic Disease, *Salmonellosis*, available from http://www.cdc.gov/ncidod/dbmd/diseaseinfo/salmonellosis_g.htm , cited 2002, June 21

Centers for Disease Control and Prevention, Division of Bacterial and Mycotic Diseases. *Group A Streptococcal (GAS) Disease*. Available from: http://www.cdc.gov/ncidod/dbmd/diseaseinfo/groupastreptococcal_g.htm , cited 2002, June 21

Centers for Disease Control and Prevention, Division of Parasitic Diseases, *Campylobacter infection*, available from http://www.cdc.gov/ncidod/dpd/healthywater/factsheets/campylobacter.htm , cited 2002, Jun 21

Centers for Disease Control and Prevention, Division of Parasitic Diseases, *Cryptosporidium parvum*, available from http://www.cdc.gov/ncidod/dpd/parasites/cryptosporidiosis/default.htm , cited 2002, Jun 21

Centers for Disease Control and Prevention, Prevention and Control of Meningococcal Disease, Vaccine information statement, CDC 3-31-2000, available at http://www.cdc.gov/nip/publications/VIS/ , cited 2002, October

Centers for Disease Control and Prevention, Public Health and Aging: Influenza Vaccination Coverage Among Adults Aged >50 Years and Pneumococcal Vaccination Coverage Among Adults Aged >65 Years---United States 2002, *MMWR Weekly*, October 17, 2003; 41:987-992.

Centers for Disease Control and Prevention, TB in the U.S., National Surveillance System, *Highlights from 2001*, available at http://www.cdc.gov/nchstp/tb , cited 2002, October

Centers for Disease Control and Prevention. Gonococcal Infections, Sexually transmitted diseases treatment guidelines 2002. *MMWR* 2002; 51 (No. RR-6): 36-42.

Centers for Disease Control and Prevention. Influenza. *Manual for the Surveillance of Vaccine-Preventable Diseases*. Atlanta, GA: 1999.

Centers for Disease Control and Prevention. Lyme Disease-United States, 2001-2002. *MMWR* 2004; 53(No. 17): 365-369

Centers for Disease Control and Prevention. Pertussis. Epidemiology and prevention of vaccine preventable diseases. 7th edition 2002. 58-70.

Centers for Disease Control and Prevention. Prevention and Control of Influenza. Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2000; 49(RR03): 1-38.

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 1992. Published September 24, 1993 for *Morbidity and Mortality Weekly Report 1992*;41(No.55): 4-9

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 1993. Published October 21, 1994 for *Morbidity and Mortality Weekly Report 1993*;42(No.53): 4-9 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 1994. Published October 6, 1995 for *Morbidity and Mortality Weekly Report 1994*;43(No.53): 4-9 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 1995. Published October 25, 1996 for *Morbidity and Mortality Weekly Report 1995*;44(No.53): 4-9 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 1996. Published October 31, 1997 for *Morbidity and Mortality Weekly Report 1996*;45(No.53): 4-9 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 1997. Published November 20, 1998 for *Morbidity and Mortality Weekly Report 1997*;46(No.54): 4-9 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 1998. Published December 31, 1999 for *Morbidity and Mortality Weekly Report 1998*;47(No.53): 4-11 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 1999. Published April 6, 2001 for *Morbidity and Mortality Weekly Report 1999*;48(No.53): 4-11 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 2000. Published June 14, 2002 for *Morbidity and Mortality Weekly Report 2000*;49(No.53): 4-11 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 2001. Published May 2, 2003 for *Morbidity and Mortality Weekly Report 2001*;50(No.53): 4-12 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Summary of notifiable diseases, United States, 2002. Published April 30, 2004 for *Morbidity and Mortality Weekly Report 2002*;51(No.53): 18-26, 70-74 http://www.cdc.gov/mmwr/summary.html

Centers for Disease Control and Prevention. Varicella. Epidemiology and prevention of vaccine preventable diseases. 7th edition 2002. 139-155.

Centers for Disease Control, Division of Vector-Borne Infectious Diseases, West Nile Virus available at http://www.cdc.gov/ncidod/dvbid/westnile/surv&controlCaseCount2002.htm cited June 2003

Centers for Disease Control: IDU/HIV Prevention: Medical Management of Chronic Hepatitis, September 2002

Chin J. MD, MPH, and Editor: Control of Communicable Disease Manual. Report of the APHA, 2000 (Hepatitis C)

Chin J., editor, Cryptosporidiosis. In: *Control of Communicable Diseases Manual*, 17th ed., Washington: American Public Health Association, 2000, p.134-138

Chin J., editor, E.coli O157:H7, In: *Control of Communicable Diseases Manual*, 17th ed., Washington: American Public Health Association, 2000, p.155-158

Chin J., editor, Salmonellosis, In: *Control of Communicable Diseases Manual*, 17th ed., Washington: American Public Health Association, 2000, p.440-444

Chin J., editor, Tuberculosis, In: *Control of Communicable Diseases Manual*, 17th ed., Washington: American Public Health Association, 2000, p.521-530

Das, Debjani, Don Weiss et al. "Enhanced Drop-in Syndromic Surveillance in New York City Following September 11, 2001." J Urban Health 2003 80: i76-i88.

George M. Lauer et al.: Hepatitis C virus Infection. New England Journal of Medicine, volume 345, No 1 July 5, 2001

Journal of Urban Health. June 1, 2003, Volume 80, Supplement 1. Bioterrorism: Syndromic Surveillance. http://jurban.oupjournals.org/content/vol80/suppl_1/index.shtml

New Hampshire Department of Health and Human Services, Healthy New Hampshire 2010; March 2001: 17, 25 available on the web at http://www.healthynh2010.org

NIH: Consensus Development Conference Statement: Management of Hepatitis C, September 2002

Orriss GD. Animal diseases of public health importance. *Emerging Infectious Diseases* 1997; 3(4): 497-502.

Pruisner SB. Prion diseases in humans and animals. *Virology* 1996; 7: 159-73.

Tan CG, Sandhu HS, et al. "Surveillance for anthrax cases associated with contaminated letters, New Jersey, Delaware, and Pennsylvania, 2001." Emerging Infectious Diseases Volume 8, Number 10, October 2002. Available from: URL: http://www.cdc.gov/ncidod/EID/vol8no10/02-0322.htm

US Geological Survey. West Nile Virus available at http://cindi.usgs.gov/hazard/event/west_nile/ cited June 2003

Whitley RJ, et al. Technical report: Transmissible spongiform encephalopathies: A review for pediatricians. (T109906*).Pediatrics* 2000; 106(5): 1160-1165.

Williams AA, Parashar UD, et al. "Bioterrorism-related anthrax surveillance, Connecticut, September-December, 2001."Emerging Infectious Diseases Volume 8, Number 10, October 2002. Available from: URL: http://www.cdc.gov/ncidod/EID/vol8no10/02-0399.htm